The Builder.

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*Japanese Pottery and Japanese Drawing.**

THE large and finely-illustrated volume recently brought out by Mr. James L. Bowes on Japanese pottery is not only one of the most beautiful but one of the most useful and rational books upon Japanese work which has been published in England: useful, because it gives a very complete and intelligible analysis of the various styles of Japanese pottery, and rational because the author, although probably the most accomplished connoisseur in Japanese art in this country, is not so indiscriminating in his admiration as to accept as beautiful everything that is Japanese, or even everything that the Japanese themselves consider to be beautiful. Critics who thus combine knowledge with judgment on Japanese art are too rare in this country.

Mr. Bowes is logical and systematic in his division of the subject. He commences with mythological tradition, which is curious if not very instructive. All Japanese reports, he tells us at the commencement, agree in stating that the art of pottery was invented long before the historical period of Japan, which commences 660 B.C. This tradition is based on the fact, as vouched for by the late Mr. Ninagawa, archæologist in the Imperial Museum of Tokio, that in the earliest Japanese history it is stated that "Sosanowo-no-o-mi-Kami advised Tenatsuchi to prepare from different fruits a drink in eight vases," but, adds the learned archæologist, "we are unacquainted with any specimens of these ancient productions"; in which case his theories need not detain us.

Coming to the next chapter, "Traditional," we are on firmer ground, for here we are given figured specimens of very old and undated bits of Japanese pottery which have been dug up from various ancient mounds in Japan. These examples serve once more to point the lesson which every find of very ancient pottery seems to teach, viz.: that in the earliest periods of which we find any remains of pottery the art was much the same all the world over. There is nothing specially Japanese, as we regard Japanese work in the present day, either in the outlines or the decoration of these ancient vases and fragments of vases found in Japan. They belong to the same general type as the pottery found by Dr. Schliemann and General Cesnola in their various explorations. The outlines are simple but shapely, and the ornamentation consists mainly of striations, oblique, horizontal, crossed, or chevroned, and much like what may be seen in the archaic Greek vase room at the British Museum. They have no affinity with the types which we are accustomed in these days to regard as peculiarly Japanese.

The "Historical" phase treated of in the next chapter commences not, as the Japanese would have it, at 660 B.C., but, according to Mr. Bowes, at about the eighth century of the Christian era. But at this period there is no evidence of the production of anything more elaborate than unglazed stoneware and earthenware made by hand; nor does there seem to have been any marked advance in this respect for the next four centuries, when we come on the first historical artist, whose original name is too long to write, but who became known as "Toshiro," and is recorded to have visited China in 1222, and there learned the art of glazing. "On his return to Japan his knowledge enabled him to select clays of a suitable character for the improved wares which he wished to produce, and he commenced to make small objects, having a slight approach to elegance in form, to which he imparted some degree of beauty by the skilful application of glazes but his skill carried him no further in this direction than simple brown glazes of various shades speckled with black."

The productions which are thus rather unsympathetically described were in fact the small jars of brown stoneware, made for holding powdered tea, and of which there were a number of specimens in the fine exhibition of Japanese work held some time since at the gallery of the Fine Art Society. There is a simplicity of design about these, and purpose-like and practical character, which is in itself admirable as far as it goes; but we agree with the author in thinking that it is impossible to echo the extravagant admiration which it appears the Japanese connoisseurs have for these objects, and which is probably, as he suggests, a kind of affectation of conservatism which leads them to profess a preference for these plain little brown jars before all the elaborated and often beautifully decorated ware of more modern times. Partly perhaps there is a kind of social sanctity connected with this form of tea-mug, for the taking of tea seems to have been a very serious social function for centuries past, and the author gives, on one plate, sketches of no less than thirty-one different small implements which were necessary to the complete fitting out of a tea-function. But from some further remarks on the same subject on another page, it would seem either that the Japanese are more foolish than they are usually supposed to be in these matters, or else they find a certain serious and *spirituel* enjoyment in mystifying the stranger. In the frontispiece the author gives a coloured facsimile of such an ancient jar, which was sent to him as a specimen of Toshiro's work. It is simply a small brown stoneware jar of a shape rather like a barrel, narrower at each end than in the middle, and as the author observes, presents no feature which an intelligent English potter of to-day would find any difficulty in imitating.

"This object came to England most carefully protected in a double case, the jar being first enveloped in a white-wadded silken bag and then enclosed in a box of *kiri* wood decorated with gold lacquer; this was placed in a second case made of *sakura* wood, and protected by pads of white satin; the outer case bears the late owner's name written in gold, and the character *on-chaire*, the prefix signifying that the *chaire* is entitled to honourable consideration."

This elaborate wrapping up of so simple an article seems something like the kind of childishness which was attributed to Bret Harte's "Heathen Chinee," and which half suggests an idea whether the author of it is not indulging in an elaborate jest at the expense of the credulity of the European.

The frontispiece, just alluded to, is one of the most useful points in the book. It is an admirably-executed chromolithograph, printed by Didot & Cie, Paris, giving facsimile representations of nine different characteristic classes of ware, with their approximate dates

* Japanese Pottery, with Notes describing the Thoughts and Subjects employed in its Decoration, and Illustrations from Examples in the Bowes Collection. By James L. Bowes, Honorary Consul for Japan at Liverpool. Liverpool: E. Howell; 1890.

and so delicately executed that for purposes of comparison they are almost as good as the actual objects. We can here contrast the plain brown jar of seventeenth-century Satsuma work with the delicate work of the early nineteenth century, with its creamy tint, piquant shape, and sprinkling of daintily-wrought and gilded flowers. The Kaga ware of the same date, somewhat similar in general tone but a great deal more formal and conventional in style of ornamentation, is contrasted with the Satsuma; and other well-marked varieties are shown with equal brilliancy and delicacy, and serve to illustrate the information given in the text in regard to their date, place, and method of manufacture.

The dawn of the modern European taste for Japanese ware the author traces to the Paris Exhibition of 1867, before which time there was little real Japanese work known in Europe, the exception consisting mainly of the collection of lacquered work made by Marie Antoinette and now in the Louvre. "The mind," says Mr. Bowes, will "naturally turn in view of this statement to the porcelain known as Old Japan, of which examples may be found in almost every great house in Europe. But this ware does not in any sense represent Japanese art, as it was made to the order of Dutch traders, chiefly during the second half of the seventeenth century, and decorated with designs furnished by European artists." The modern admiration of and demand for Japanese pottery and other work seems to be leading us into somewhat similar complications, for we suspect that not a little that is sold and accepted as Japanese work is now made in this country. The "Old Japan" referred to was made entirely for export, like some classes of goods of Manchester and Birmingham manufacture, and the European style and appearance of it are at once recognisable in comparing the example given in the frontispiece with those by which it is accompanied. This is a white plate painted over with flowers and birds in rather strong colours and picked out or lined with gilding, and has a rich effect of its kind, but is as different as possible in feeling from pure Japanese work. As to the difference between old and recent Satsuma wares, and the curious manner in which the latter were imposed on purchasers (we believe not wilfully) as of the most rare and ancient work, we must refer the reader to the chapter on Satsuma, which will be of use in guarding those who have not mastered the subject from being deceived in like manner.

We cannot pretend here to follow the author through all the mazes of the various styles and dates, which he confesses have taken him many years to unravel, and he probably knows more of the subject than any other person in England. It is more to our purpose to look at the artistic results as exhibited in some of the objects illustrated. Pottery is one of the arts in which Japanese taste is set off to the best advantage, although, as we have seen, the Japanese themselves set a curiously exaggerated value upon some of what are by no means their best classes of work. Japanese and Greek pottery may be said to exhibit, taken broadly, two perfectly different principles of decorating pottery. The ornament in a Greek vase is applied distinctly with reference to the form and design of the vase itself, which is always paramount and controls the applied decoration. The vase thus decorated is intended as an object of art to be studied for its own sake, and to be complete in itself. The Japanese system seems rather intended to render the vase or plate, or whatever it is, an object which will supply decorative effect when regarded in connexion with other things; it is not so much to be studied apart for itself, as an object to contribute to a general scheme of decorative effect of an interior. And the style of decoration which suits the one purpose does not suit the other. The Kioto and Hizen vases figured in Mr. Bowes's frontispiece, and perhaps intentionally contrasted, form a good illustration of this, though not so marked as would be furnished by a Greek vase and the Kioto cup. The Hizen plate (one of the "old Japan" articles) contains detail which is exceedingly pretty in itself, but the total effect of which is weak; in the Kioto cup the design, regarded in detail, is spotty and even clumsy, and destitute of distinct form; it cannot be said to be beautiful in detail, but the whole vase has a most powerful decorative effect, and would make itself felt among whatever collection of objects it was placed, in a way that a Greek vase would certainly not do. The Kaga ware is more symmetrically designed in detail, and in this respect varies from a good deal of other Japanese pottery, and rather falls between two stools; it is hardly sufficiently interesting merely as detail, and it is not sufficiently effective when viewed from without. The lesson that the Japanese pottery in a general way teaches is, that if we wish pottery to have a powerful general effect on the decoration of our rooms, we should select that in which colour is laid on in masses in a broad and fearless way, without too close attention to detail, rather than that in which detail is very refined and symmetrical and general effect is overlooked. There is no doubt that the former is the general characteristic of Japanese pottery, and on the whole perhaps it is the best way to use pottery in a decorative sense. At all events the demand in the present day for colour effect naturally gives the Japanese pottery a high place. A collection of Greek pottery of the best period would show a far higher and more refined art, as far as design is concerned; but as far as decorative effect is concerned, it would be nowhere besides Japanese. And this appears to be the real defence of the curiously haphazard and cross-corner manner in which decoration is applied to Japanese pottery. It is the work of a people who attached great importance to the general decorative effect of an apartment, and who designed everything to assist that effect. And as far as pottery is concerned they were on the whole right. Occasionally they are too *bizarre* and angular even in their pottery; but as a general rule it may be said that if you wish for a rich and decorative effect in your breakfast or dinner china, you will be more likely to get it by selecting a design on Japanese than one on Greek lines.

Before taking leave for the present of Mr. Bowes's book, which we strongly recommend to the attention of all who are interested in Japanese art, we should like to call special attention to one remark in it, which indicates a very interesting phase of Japanese character, and which perhaps throws some light on the feeling for finish of workmanship which is so characteristic of the nation. In Japan, we are told in the "Historical" chapter, there have been no museums, and those who possessed objects of art that were worth seeing would exhibit them a few only at a time; a simple vase, or a pair, or a *kakemono* (hanging picture) would be placed in a recess in the room formed for the display of such objects; when another season came round other works would be exhibited in the same way. "'It would be considered the height of vulgarity in my country,' said a Japanese visitor to the writer, 'to display all these works at once, as you do in your museum.'" It is not surprising that people who think thus should take care that each work they produce is worth seeing and will bear examination in detail; a lesson not without value to a country like this, where *objets d'art* are produced wholesale, and even by machinery.

It is in this appreciation of the highest and most delicate finish in decorative work, for the pure love of it, that the Japanese show themselves so eminently a nation of artists. But there is a curious anomaly in their coarse and childish drawing of the figures of men and animals, which shows that their powers have a very narrow range. This is illustrated especially just now in London by the exhibition of the drawings of Hokusai at the Fine Art Society's Gallery. Hokusai belonged to the latter part of the last and early part of the present century, and is reputed one of the most able and distinguished of Japanese draughtsmen. We quite concur in the opinion expressed in the preface to the catalogue, that he was one of the most honest workers that ever toiled in the field of art. There is a passage translated from his preface to one of his own books, which is very interesting, recording how at the age of six he had a mania for drawing the forms of objects, and calculating how much more he will improve as time goes on, so that he thinks if he lives to a hundred and ten "every dot and every line from my brush will be alive. Written at the age of seventy-five by me, formerly Hokusai, now Gwa-kio Rojin—the old man mad about drawing." This is charming; but the drawings executed by this naturally-gifted enthusiast only form a fresh example of the limitations of Japanese perception. There are admirable drawings of birds, as usual; a splendid study of a red lobster, and so on; but the figure-drawings are little better than absurdities. Like other Japanese, he has a faculty of seizing the grotesque or ludicrous in a momentary action of a figure or a group of figures, as in the little sketch of a group of people under umbrellas, printed in the margin of the catalogue preface, where nothing is seen but the umbrellas and the legs of two or three figures, yet there is a general impression of a group of people and of a certain movement in the group. But this kind of indication, when the knack of it is once obtained, is not very difficult to repeat *ad libitum*, and the Japanese do so repeat it, till one gets tired of these little jokes, the humour of which was amusing at first. Hokusai had also, like other Japanese artists, a faculty of giving a great deal of character to a woman's costume, and as the Japanese woman is all costume this does not make any demand upon figure drawing. There is an idea of motion well conveyed, too, in one or two of Hokusai's figures of women walking in their voluminous garments, the whole mass of which seems to move along together like a ship in full sail, as in No. 17, "Young Lady and Child Walking." But the face seems to be the last thing to which any care is devoted. The woman's costume is elaborately and apparently truthfully indicated; the face is an expanse with a dot for a mouth and two streaks for eyes; the expressions of all are the same, if they can be said to have any expression. But look at some of the figures of men, and their extraordinary attitudes, and the still more extraordinary drawing of hands and feet (the latter especially). How is it that people who can make a beautiful drawing of a bird's claw cannot draw or even indicate correctly a human foot? Look at the foot in the sketch of the "Sculptor of Masks" (45). Look again at the "Study of a Tiger" (19). It is not like a tiger, it is not like any animal in creation. Then for the interpretation of nature, look at the "Study of a Wave" (12), which we can only understand on the supposition that it is the original wave which gave rise to the sailor's title of "cat's-paw." Look at "Sagami Bay and the Island of Yénoshima" (80), with a few decorative waves put in, in parallel lines, in the front of the bay. Did Hokusai see waves like that? There is a large panel, "Corner of a Forest with high fir trees" (186), which is nothing more than a big smudge with some trunks of trees at the bottom of it. Any one could do that; why is it exhibited? It was creditable to Hokushai that he tried to draw trees, but it is quite evident he failed with them, as he did with women's faces and men's feet, and tigers, and waves. It is very strange that people who can draw a certain class of objects so well should draw others so badly; but it is still stranger that these grotesque attempts should be hung up in an Art Gallery for us to admire, and that a crowd of people should be simple enough to go and admire them merely because they are Japanese.

The Annual Dinner of the Society of Engineers is fixed for Wednesday, December 10, at the Holborn Restaurant.

A PROBLEM IN VENTILATION BY HEAT.

BY MR. W. P. BUCHAN, SANITARY ENGINEER.*

SOME time ago I was testing the speed of the air up the ventilating-pipe from off the ceiling of a church. The vertical part of this pipe was about 40 ft. high, while the diameter of the pipe was 18 in.† Near to the bottom of the vertical pipe there was a small circular gas-tube, with provision for lighting a dozen of gas-jets when wished. I first tested the ventilating-pipe without the gas being lighted, when the speed indicated was 160 linear feet per minute. With the gas lighted, the speed rose to 300 linear feet per minute. This was no great speed, but it showed that the heat of the gas gave considerable increase of up-current. Then the question occurred, Would the speed be still further increased by suspending a piece of 12-in. diameter pipe, and, say, 3 ft. long, of thin sheet-iron a little above the gas-jets, so that when these jets were lighted they would heat the 12-in. tube, and so increase the up-current? As it was going to be rather troublesome to make the experiment with the 18-in. pipe, I constructed a 6-in. diameter pipe, 3 ft. long, with a 3-in. diameter inlet at its foot, but to one side, the bottom being closed with a lid. The 3-in. diameter inlet was to suit the anemometer.

Upon suspending a piece of 3-in. diameter thin sheet-iron tubing, 1 ft. long, above a No. 4 Bray's gas-burner, placed inside of the 6-in. pipe, the speed indicated, with the gas lighted, was 520 linear feet in two minutes. With the 3-in. tube removed, the speed rose to 585 ft. in the two minutes, showing a difference of 65 ft. The inner tube in this case, therefore, did more harm than good. Another experiment was thereafter made with a piece of plain sheet-iron about 1 ft. long and 5½ in. wide, suspended a little above the gas, with the result that with this sheet-iron plate on the speed indicated was 555 ft. in two minutes. Upon removing the plate the speed rose to 580 ft. in two minutes. The use of the plates would, therefore, appear to be a mistake, and a pure waste of money also,—the up-current being fully 5 per cent. less with it than without it.

This loss of speed with the inner tube or the plate suspended above the gas I attribute to the extra friction.

As Mr. Aitken, of Darroch, has stated that there are about 400,000,000 particles of matter in a cubic inch of air above a Bunsen gas-burner, we have still an ample quantity to heat the air in a ventilating tube, without the addition of either the inner tube or suspended plate above referred to, supposing the number of particles of matter above an ordinary gas-jet were less than a quarter of the number mentioned by Mr. Aitken.

In order to get the full value of the heat and conserve it for the up-current, it would be all right to wrap asbestos or felt round the outside of the pipe, but suspending large concentric pipes or plates inside the outlet ventilating pipe in the manner described, appears to me to be a pure waste of money. They retard the up-current, and so harm the ventilation, whether the gas is lighted below them or not; and in many cases, in practice, the gas would not require to be lighted, as when there was wind or other natural cause to produce a good up-current. In this latter case suspension of a pipe or plate inside of the outlet pipe would simply be *a continuous check*. In fact, in thousands of cases, were the outlet ventilating pipes put in large enough, and fitted up properly, no gas would be needed,—as, *e.g.*, for one-storied schools and for churches and many halls, &c.

SOUTH WALES ART SOCIETY AND SKETCHING CLUB.—The third annual exhibition held under the auspices of this Society was opened on the 19th inst. in Cardiff.

* Read before the Philosophical Society of Glasgow on November 19.

† The pipe would have answered its purpose better had it been 36 in. diameter.

NOTES.

IT has been said that among the matters which will have to be taken into account by the historian who deals with the present age, co-operation and strikes will occupy a prominent position. The latter have, perhaps, attained their prominence mainly in consequence of the principle of co-operation underlying trades unionism, and a connexion may thus be said to subsist between the two. But what is understood as the co-operative movement has, of course, aims entirely distinct from those of the unions. This distinction was clearly brought out by Judge Hughes, in an encouraging address to the co-operators at the Crystal Palace last Saturday, when he implored his hearers to pay no heed to "the syren songs of brand-new or old-revived nostrums for setting the world right, — the songs of State Socialists or new trade unionists." The report of the Labour Correspondent of the Board of Trade, which has just been published, states that there were strikes at no fewer than 3,164 establishments during 1889, 67 per cent. being for advanced wages. Now, although a large proportion of these latter were successful,—48·3 fully, and 31·5 partially,—it is shown that the average loss to each individual in wages while the strike lasted amounted to about 3*l.* 5*s.* This is equivalent to 1*s.* 3*d.* per week for a twelvemonth, and, as the strikes committees and trades unions expended a further sum of 63,636*l.* in support of the men, it certainly discounts the "success" considerably. Nevertheless, the fame of this same success seems to be inducing destitute workers from various quarters to flock to our shores. Only this week a batch of 300 Polish Jews arrived to swell the already crowded ranks, allured by the assurance that work is plentiful and well paid for in this country. Some twenty of the strikes of 1889 were what have been termed "sympathetic" strikes,—and this year they have, unfortunately, been still more numerous. The spectacle of trade after trade being called out to show their "sympathy" with entirely different industries by thus bringing additional pressure to bear upon employers is becoming very common, and proving very irritating and vexatious. It cannot but be regarded as fortunate that the great Australian strike, which proceeded on this method, ended in disastrous failure; for the principle is mischievous, and causes universal uncertainty, mistrust, and uneasiness, thus putting a restraint upon commercial enterprise. It is to be hoped that similar attempts at "coercion" in this country will meet with a similar fate, and that strikes of this nature may not figure so largely in the returns next year as they will in this.

AMONG the Bills announced at the opening of Parliament on Tuesday is one by Mr. Causton, "to regulate and limit the powers of the Metropolitan Water Companies in respect of their charges for the supply of water," and one brought forward by Mr. G. Bruce, "to provide for the supply of water by meter for domestic purposes within the limits of supply of the London Water Companies." We have long considered that the meter system of supply is the real remedy for most of the disputes between the water companies and their customers, and we hope this idea will be advanced a stage, though we do not expect the Bill to be passed this Session. We hope success will attend Mr. Jacoby's Bill "to limit the hours for the playing of street organs and other musical instruments in the metropolis." We can only regard this as a half measure, and we hope to see the day when the organ-grinder will be turned off the London streets altogether; but even to limit his hours would be something. The announcement of the Bill, we observe, was received with "laughter." It is no laughing matter to many people. Mr. Morton proposes a Bill to provide that "railway return tickets may be used at any time," from which we gather that Mr. Morton does not know much about railway matters. If he limited the conditions to "any time within the year or half-year of issue," the Bill would have a chance of being passed, and would be a convenience to the public; but inasmuch as railway tickets are practically receipts for money, it is absurd to suppose that their use can be made entirely independent of the annual accounts. Sir W. Lawson's proposal for an address to her Majesty "praying that when she confers any honour or title on any of her subjects she will be pleased to state the services for which such honour or title is granted," would, if it were passed (of which we do not suppose there is the least chance), perhaps exercise a salutary effect in rendering the granting of titles a distinct acknowledgment of worthy service in all cases, instead of being, as it too often is, an empty honour bestowed according to routine, fashion, or Court interest. If the proposal actually comes up for discussion, we shall at all events be sure of an amusing speech from the mover of it. Mr. Lawson is to move "that it is expedient to open National Museums and Galleries on Sundays at certain hours and with special regulations," a moderate and guarded way of putting the matter which it is to be hoped will conciliate some of those irreconcilables who have hitherto turned their backs on every suggestion of the kind. Sir H. Roscoe promises a Bill in regard to technical education, and the Government, in an indefinite kind of way, promise us more legislation on the perennial subject of the public health. With these and other measures we shall deal when the texts of the Bills are printed.

THE accident at Jersey City, where the wall of an immense four-story building fell under the pressure of a high wind, seems to have been another Templeton mill case: an unroofed building with a great expanse of thin wall (1 ft. thick, is the statement), which might have been safe when built, but was evidently not safe while building. One man was killed, and about a dozen injured. Supposing that the report is correct as to the circumstances, this is another warning against the practice of designing buildings so as to be risky and insecure during erection. If those who design and erect buildings so as to be in danger of falling while in progress were brought in guilty of manslaughter in case of a fatal accident, it would perhaps have a wholesome effect.

IN reference to the case of Noble *v.* Yates, commented on in a "Note" in last week's *Builder* (page 401), we have received the following letter from a member of the jury (who gives us his name and address), which throws some new and useful light on the case, and confirms our view that, although in this case, owing to the circumstances mentioned by our correspondent, the plaintiff failed to obtain a verdict, in a general sense it must certainly be the duty of landlords having houses on view for the purpose of letting to see that they are in such condition at the time as not to cause accidents to persons going over them. The letter is as follows:—

"SIR,—In the paragraph under 'Notes' in this week's *Builder* the verdict in the case of Noble *v.* Yates is somewhat misleading, owing, no doubt, to the fact that the report of the trial presented to you was very briefly summarised. It is a fact that the verdict was legally given in favour of the defendant (Yates), but it was only under the following very special circumstances of the case, viz.:—The plaintiff could not positively satisfy the jury that she was the would-be tenant, being then accompaniedby her previous landlady (who was also looking for a house); and the fact was, that being told this house was not to let,—having no notice up to that effect,—they went into it in preference to the other two which had notices up. Taking these and other circumstances into consideration, the jury, after three hours' deliberation, brought in a verdict for the defendant, but with a strongly-worded rider that there was some moral blame attached to the defendant by the keys of this house being on the same bunch as the two which were admittedly to let, and, as a consequence to this rider (which the Judge agreed with) the defendant consented to make the plaintiff some reasonable compensation.

I should be much obliged if you would mention

these facts in your next week's 'Notes,' as had the circumstances been *only* as reported by you the plaintiff would, I have little doubt, obtained the verdict with substantial damages.

ONE OF THE JURY."

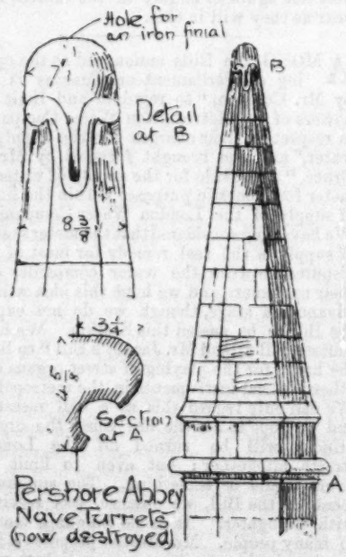
THE proposed Berlin International Art Exhibition for 1891, alluded to on page 393 *ante*, has now been definitely decided on. The "programme" drawn up by the "Verein Berliner Künstler," under the presidency of Professor Anton v. Werner, has been approved of by the Government, the latter having promised to aid the scheme in every way. The Empress Frederick has accepted the "patronage," and wishes to use her influence to the benefit of the exhibition. The Emperor intends granting special awards in the form of gold medals, similar to those given away in 1886 at the so-called Jubilee Exhibition.

AMONG forthcoming new illustrative works on London, we hear of Mr. Loftie's "London City," which will contain more than three hundred illustrations, engraved in Paris, from original drawings by Mr. William Luker, jun. According to the list and prospectus issued from the Leadenhall Press, we gather that all the views will be of existing buildings, scenes, and episodes of London life. Some, indeed, are of rather a commonplace character—such as "Juvenile Ball at the Mansion House," "Bennett's Clock in Cheapside," "A Mid-day Snack," "Struggle for the 'Bus (*sic*), New Bridge-street," "*Sportsman* Office, Fleet-street," "Early Morning, Winter" (carting the snow), and so on; whilst by "Middle Temple Bar" and "Old Gateway in Chancery-lane," we hope drawings of Middle Temple Hall and of Lincoln's Inn-gatehouse (rather than of the entrance to Rolls-yard) are intended. The list needs revision in other respects; and "Petticoat-lane" and "Little Bridge-street" are names of the past. On the other hand, many of the subjects are aptly chosen, and should form a useful record of what are now familiar incidents of daily life in the City. A stranger's interest might be aroused by the mass of over-head wires, the crowd looking at the pages of *Punch*, and the street-orderly boy,—busy at his calling he plies his shovel,—delineated in the view of St. Bride's steeple, as seen from Fleet-street. The "old garden at No. 4, Crosby-square" is, we believe, the private garden which Mr. W. Besant claims to have discovered, and of which he hesitated to specify the situation lest it should be forthwith built over. There it is, however, and not quite hidden from sight. Mr. Alfred Beaver's work upon "Old Chelsea," with his own illustrations, is to consist of eighteen monthly parts. We are glad to notice that he has announced his intention of taking nothing upon trust, and of verifying everything point by point. The illustrations to Mr. George Clinch's "Marylebone and St. Pancras" have been taken, mainly, from the Crace Collection and other sources in the British Museum, and will, so far, be tolerably well known to students of London topography. This later volume should form an appropriate companion to the author's recently-published "Bloomsbury and St. Giles's." Mr. Justin McCarthy's "From Charing Cross to St. Paul's" with twelve plates and many other engravings of street scenes from Mr. Joseph Pennell's drawings, was announced for publication this week.

MR. G. C. DOWNIE, Rose-street-lane, Edinburgh, has published eight cleverly-executed drawings representing views of that city as it might have been, and as it may be, should the railway companies have their way. One of the most striking of these drawings exhibits the Princes-street Gardens with the Nor Loch occupying the whole breadth of valley. In place of the earthen mound which cuts the valley in two, there is a suspension-bridge, so that, as viewed from a point above St. Cuthbert's Church, an expanse of water is seen extending eastward to the base of the Calton Hill, reflecting on the right hand the Castle rock, and on the left the wooded terrace in front of Princes-street. The same scene is exhibited as in the possession of the railway companies; the whole breadth of the gardens is covered with rails, and the Scott Monument utilised for railway signals. The market-gardeners, fruit merchants, and greengrocers have drawn up memorials to the Town Council urging the preservation of the Waverley Market, which meets their requirements in a way that a similar building on another site could not do. A memorial to a like effect is being circulated amongst the citizens in general, and is receiving the signatures of a very large number of influential citizens.

THE Duke of Cambridge will preside at an entertainment to be given on the afternoon of Saturday, December 13 next, in Prince's Hall, Piccadilly, in aid of a fund for purchasing an organ for, and restoring the chapel at the Royal Military Asylum, Chelsea. This was founded by the Duke of York for children of soldiers of our regular army, and built in 1801-2, after the designs of John Sanders, architect. It is built for the most part of brick, with stone dressings; the principal and south-west front, towards Burton's-court, has a Classical portico with an order of four columns and pediment.

THE Capital and Counties Banking Company having purchased St. Andrew's House, Pershore, and the adjoining houses, have built a new wing, made other alterations and additions, and opened them as their business premises. The old disused chapel in the basement, with walls 6 ft. thick, and heavy vaulted ceiling, now forms in part the bank strong-room. This curious old structure was for years a matter of speculation as to its date and the purpose for which it was built. It was generally supposed to date from the fifteenth century, but upon opening out the back of the vault for the insertion of one of Milner's fireproof doors, it was found to be built with blocks of Perpendicular tracery and Early English moulded arch voussoirs taken from the Benedictine Abbey at the destruction of the nave by Henry VIII. The chapel must, therefore, have been built for the use of the Catholics after the Reformation. It was found that cart-loads of finely-moulded Early English and later work were buried in the foundations, together with bold window tracery of large size. Portions of the western turrets of the nave, of Early character, were brought to light from which the architect, Mr. Lunn, after carefully patching them together, took measured drawings. We add some details copied from the sketches which



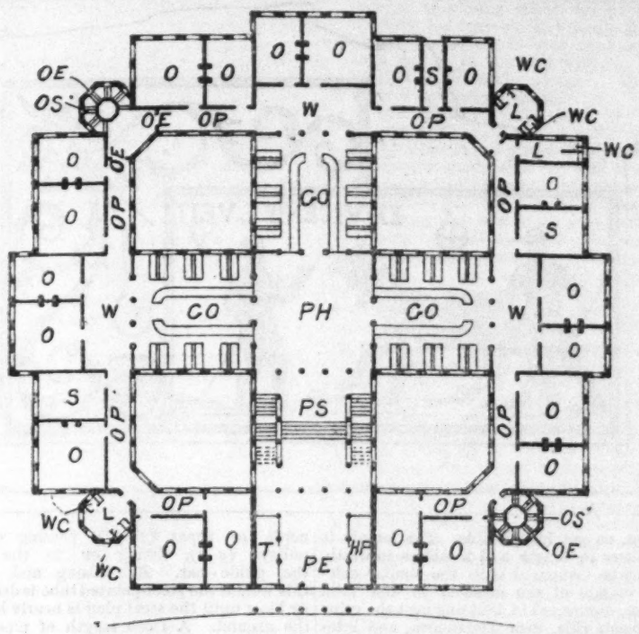
he has kindly forwarded to us. The whole of the front ground-floor appears to have been a large hall, about 40 ft. long, with fine ashlar walls of Painswick stone and huge oak beams. A circular turret staircase, partly destroyed, formed the communication with the chapel. The Banking Company's local managers, Mr. Slatter and Mr. Pittway, have had all these interesting relics preserved with the greatest care.

IN the early part of last week there was an unusually dense fog in Dundee and its neighbourhood, on which occasion it appears that a gentleman belonging to the Chemical department of University College, Dundee, took the opportunity of investigating the amount of carbonic acid in the atmosphere within the College grounds at eight in the morning, when (as we gather) the fog was at its thickest. He found this amounted to over eight volumes per 10,000, or more than double the normal quantity; so it was stated in the *Dundee Evening Telegraph*. It is not the first time that fog has been analysed, but we do not know whether attention has been drawn to a superfluity of carbonic acid in previous cases. The point is of some interest in regard to the origin of fogs and their possible influence on health.

THE fire at Wellington Barracks the other day was much less fatal than it might have been, owing to the circumstance that it occurred by day and not by night. As it was, two children lost their lives. The "Rookery" (such is the suggestive name by which the quarters of the married non-commissioned officers has long been known) was condemned as unsafe and insanitary twenty-five or thirty years ago, and the censure passed by the coroner's jury upon the War Office authorities was therefore well-deserved and not one whit too strong, as all who knew the "Rookery" can testify.

A CORRESPONDENT informs us that on Friday of last week a bazaar was held in the Grange Free Church, Edinburgh, the proceeds of which are to be applied in providing accommodation for ladies who may faint during the time of service. It is to be inferred, therefore, that fainting is a common occurrence amongst the ladies of this congregation when in church. This is not to be attributed to anything sensational in the service, but to the bad ventilation of the building. The interior is fitted up with cumbrous galleries, the object having been to provide sittings for the utmost possible number of persons within a given space, the consequence being that the air becomes speedily vitiated, and fresh air cannot be admitted in sufficient quantity without producing draughts. This is only one of many instances of the absurd fatuity with which churches, concert-halls, and other public buildings are crammed fuller and fuller without it even occurring to anyone, apparently, to reflect that each fresh person introduced means so much greater consumption of oxygen. This they are left to find how they can, and then women faint (and sometimes men also) from sheer want of air to breathe.

THE present is the right time for cutting down trees. Householders should bear this in mind, since many buildings are spoilt by the too close proximity of trees. It is not only houses, but public buildings, such as village schools, which are often injured by trees. The picturesque group of elms, shady in summer, casts in autumn thousands of leaves into gutters and pipes. Hence damp and injury to walls during the winter. Another point to be borne in mind at this season of the year is that trees are often planted too close to houses. It is forgotten that the young, bushy coniferous tree, now 6 ft. high, will in a few years become a forest tree. It will be spoilt by proximity to a building, and it will also spoil the house. But all over England examples may at this time of the year be seen of trees just placed in the ground by walks and walls, which in no long time they touch.



Messrs. Flockton & Gibbs's Patented Plan for Public Buildings.

P. E. Public entrance.
P. H. Public central hall or passage.
P. S. Public staircase.
G. O. Inquiry or general office.
O. Private offices.
O. E. Official entrance.
O. S. Official staircase.
O. P. Official passage.
W. C. Water-closet.
L. Lavatory.
S. Strong room.
H. P. Hall porter.
T. Telephone room.
W. Waiting place.

MESSRS. FLOCKTON & GIBBS have written to ask us if we would publish the plans appended to their specification of the patent in architectural planning which they claim, in order that architects may understand what it is which they are endeavouring to establish as a right of planning of their own. We have not space for the four, but we give one, the most typical one, in response to their request. We quoted on page 357 *ante* ("Notes") the precise statement of claim as set forth in the specification.

WITH reference to the recent judgment in the Bishop of Lincoln's case, it may be apposite to mention that Messrs. Dawson, of Chiswick, have reproduced a picture by Mr. C. L. Floris of this historical trial. The work contains a large number of portraits, but what perhaps some of our readers may consider more important, it represents portions of the library at Lambeth Palace, in which the trial took place. It has, therefore, in one sense, an architectural value, though no doubt it will be prized more by persons interested in Church affairs as a collection of ecclestiastico-legal portraits.

SOME weeks ago the "East Grinstead Constitutional Club Company" advertised in our columns for designs for rebuilding some premises at East Grinstead for the purposes of the club. They offered the magnificent premium of *five guineas* for the set of drawings which "in their estimation" best commended themselves, and stated that this fortunate design would become "their property absolutely." They did not bind themselves to award the premium, or to employ the successful architect to carry out the work. These conditions, as stated in the original advertisement, would seem in themselves sufficient to render this invitation an exceptional instance of belief in the desire of architects to do work for nothing. But the further conditions of the programme, which has been forwarded to us by an architect who applied for it, are even more remarkable than the advertisement seemed to promise. It is intended that the lower story should be used as shops, the upper one for the usual purposes of a social and political club, with reading, smoking, billiard, and committee-rooms, &c. The general design of the buildings is to be in harmony with the surroundings, and "it is to be borne in mind that every part of the structure will be open to public view" (which means four elevations, of course). The position of the site and nature of its surroundings are such, it appears, that "it is very desirable that competitors should see and judge for themselves" how it can best be utilised (the expenses of the visit come out of the five guineas, of course). Finally, as if to put the last touch of delicate irony to the composition, it is stated that any competitor canvassing among the directors will be disqualified! The spectacle conjured up of ambitious or determined candidates canvassing the directors for the chance of a success in such a prize as this is truly pathetic. The "directors" must certainly imagine that the architectural profession is in the last stage of pauperism.

A DAY'S WALK IN EAST KENT.

VERY nearly thirteen hundred years ago, a notable episode in our country's domestic history was enacted at a now obscure spot in the southern corner of Thanet. For there, in what Pope Gregory the Great called the "*fines, angulus mundi*," St. Augustine landed with a train of forty monks. Gregory had despatched Augustine, prior of his own convent of St. Andrew amongst the pines on the Caelian Mount at Rome, to carry out a mission he had himself long and earnestly purposed to perform—the conversion to Christianity of Æthelberht and his Kentish subjects. The missionary band disembarked at what was then the most frequented landing-place in Britain by traders and marauders from Europe, already signalised by the descent there of the Jutish Hengest and Horsa upon our shores. The place was variously known as Ypwine, Hepe, Hiped, and Wipped, Fleet, in the island of Ruime (whence Ramsgate), and is now identified with Ebbe's Fleet in Thanet. At that epoch the Stoure, the British Doure, consisted of a broad estuary which opened from Sandwich Haven, forming the port of Rhutupiæ or Richborough. That river, indeed,—in this part more correctly the Wantsum,—served as highway for maritime traffic from the Channel to the Thames mouth, entering the Nore by the Nethergong at Reculver or Regulbium. At Ebbe's Fleet, Augustine had first audience of the heathen king. Albeit predisposed, through the influence of his wife, Berctha, to yield a willing ear, Æthelberht stipulates that running water shall flow between him and the preacher, lest some enchantment or magic should befall him and his people. So he takes his station upon the river's right bank, there to listen to what the monks, aided by interpreters, have to unfold. "Your words," he makes generous yet prudent answer, "are fair, and so are your promises. Yet, inasmuch as they are new and dubious, I cannot give my assent to them, and so leave the customs I have long observed, together with all the Anglo-Saxon race. But, because you have come hither, being strangers from afar, and as I seem to myself to see clearly that what you yourselves believe to be true and good you wish to impart to us, we do not desire to molest you. Nay, we are anxious to receive you hospitably, and to give to you all you need for support, nor do we hinder you from joining all whom you can to the faith of your religion." Thus encouraged, the monks are allowed to cross over the stream, and to hold another colloquy with the king hard by the ancient Roman citadel or stronghold of Rhutupiæ, whose site is yet marked by the extensive ruins of Richborough Castle, in the parish of Ash, on the Wantsum's right bank. Thence he invites the monks to his capital at Canterbury, and gives them a settlement there by the Stapel-gate, near his own heathen temple. On Whit-Sunday, June 2, of that same year (597), Æthelberht is baptised, and Augustine re-dedicates the Pagan temple to St. Pancras, predecessor of St. Augustine's Abbey.

A walk of about six miles from Deal, through Upper Deal, once within half a mile of the sea, and Shouldham, along a well-metalled high road, brings one, after turning aside to see the church at Worth, into Sandwich, which is entered by the site of the New gate in the southern wall which has been partly rased and converted into a public promenade. In the northern wall, near the site of Stonhose, or Stonar, are preserved two other of the town gates. These are the Fisher's-gate, at end of Fisher's-street, and about 80 yds. to the west, the Davis, or David's-gate, distinguished by its Barbican and Custom-house. Fisher's-street led through its gate to the old ferry over the Wantsum. The quay separates the barbican from the stone bridge, for the building whereof, in lieu of a draw-bridge, an Act was obtained in 1755. These features of the town are highly-favourite "bits" for painters; and on a fair summer's evening this side of Sandwich presents a most attractive aspect, when the old red-bricked and tiled houses are tinged rosered by the setting sun, having for background the fine Norman tower of St. Clement's Church. Crossing the bridge the wayfarer is in Thanet. For a short distance an avenue borders the road which leads straight to Ebbe's Fleet, almost due north, and thence by Pegwell Bay to Ramsgate. For three miles this road, passing through the marshes, lies evenly within a large bend of the Wantsum, which with devious course finds its way into the bay. About half-way to Ebbe's Fleet are Shellness and the "Red Lion" inn, at which latter is a ferry. The coast-guard station at Ebbe's Fleet is close to the Stone Lees marshes, by a spot three miles from Sandwich and four from Ramsgate. A field here is the reputed scene of the landing, lately commemorated by the erection of an obelisk, but now lies some distance from the sea. Retracing our steps to the turnpike gate-house we find a road that turns off to Minster. A by-path from this road makes a very pretty and varied walk to the village, which is entered at Minster Court. The Court comprises the old manor house, formerly occupied by monks or stewards of the abbey estates, and dating from the end of the twelfth century. William de Thorne, a monk of St. Augustine's, Canterbury, and native of Minster (1380), gives an account of the endowment of the abbey with some 10,000 acres of land, as delimited by the track of a deer from Westgate, in Birchington, to Sheriff's Slope, near to Monkton. The abbey, since known as St. Mildred's, had for first prioress Domneva, granddaughter of Eadbald, King of Kent, and wife to Merwald, a son of Penda of Mercia. Domneva desired to found a religious house in memory of her brothers, Æthelred and Æthelbright, murdered by Egberht's consent. Egberht, remorseful, aided her project, and the new church was consecrated by Cuthberht, Archbishop of Canterbury, to SS. Peter and Paul (as had been his own cathedral), where, it is said, stands the present parish church of St. Mary. The convent was pillaged and destroyed

by Danes. St. Mary's cruciform church has a fine nave of Norman arches in five bays; the two transepts and chancel are Early English, vaulted in stone, and the latter has a deviation towards the south. The western tower is in four stages, and has a large turret rising from the ground. The spire is covered with lead, and in the bases of some of its buttresses are Roman tile-bricks. The chancel has two flying buttresses on its northern, and one on its southern, side. A grand view of the country around may be gained from the top of the embattled tower.

A way can be made to Richborough across the Minster marshes, but the route—as the writer learned to his cost—is not easily to be found. The ruins, however, are clearly in sight, and the pedestrian should keep alongside of the railway to Sandwich as far as the bridge across the river, and then follow the river until he reaches the ferry by the "Red Lion." Across the ferry a raised bank leads to the cliff that stands over the river. On this cliff is a rectangular area of nearly six acres under cultivation, enclosed on three sides other than the east by the ruined walls. In the mid-point of the north wall is the obliquely set *porta decumana*. The walls, ranging from 20 ft. to 30 ft. in height, have suffered from an enemy besides their age, for much of their facing stone has been quarried away for road-making material. The amphitheatre is distant about a quarter of a mile southwest. The Castle of Ruppecester, which has no existing ditch or outworks, is said to have been built by Vespasian, on the then seashore, and to have been perfected by Severus, who, *teste* Matthew of Westminster, built a fastness at Reculver. Here have been dug up a very large number of ancient coins, including some of Severus's time. Having formed a palace of Æthelberht it was sacked by the Danes under Sweyn, and rehabilitated by his son Knut. A pathway along the river leads to the road from Canterbury into Sandwich. Traversing Sandwich to the site of the Sandown Gate, one finds a trackway across the sandhills to the now dismantled castle of Sandown on the northern confines of Deal, which, together with Deal and Walmer Castles, was built by Henry VIII., *circa* 1539, and upon the same plan as theirs. The waves have destroyed the sea-battery, but the interior arrangement of the central tower, its other bastions, with their galleries, inclined entrances, &c., can be readily followed. Sandown Castle formed the prison lodging of Colonel Hutchinson.

FROM ITALY.

EXCAVATIONS IN THE FORUM OF AUGUSTUS.

I HAVE already described the excavations made by the Municipality of Rome in the southern semi-circle of the Forum of Augustus, last year (see the *Builder*, March 30, 1889, p. 235).

Recently, in making the foundations for a wall with the intention of supporting the earth upon which crosses, at present, the Via Bonella, there have been found some fragments of marble statues, among which is a very interesting bust of Greek marble, 1·22 mètres high, belonging to the statue of an emperor, or victorious general. This sculpture recalls the well known statue of Trajan in the Museum of the Villa Albani.

To the decoration of the temple of Mars Ultor, which stood in the middle of the Forum, belong two large Corinthian capitals, a good deal damaged, 0·98 mètres high and 0·80 mètres in diameter; these formed part of the outer row of columns of the temple.

A great fragment of the marble cornice was also found, belonging to the roof of the vestibule, with richly-moulded sunk coffers, and a central rosette in each, and a second fragment of a smaller cornice, finely sculptured.

The ancient pavement of the Forum has been discovered, composed (like the portion found in 1889) of various qualities of marble, such as *giallo antico*, red and grey granite, *verde antico*, porphyry and serpentine marbles—forming, in the whole, a geometrical figure.

MOSAIC DISCOVERED IN THE PRÆTORIAN CAMP.

While some works were being carried out in the pavement of a modern soldiers' building at the Maccao, there has been discovered a portion of an ancient mosaic, belonging to the ancient pavement of the Prætorian Camp which stood in the same spot. The mosaic represents a panther, with a small bell at the neck, between two tamers (*lanistæ*). To the right is an inscription, as yet inexplicable. The mosaic is 3·60 mètres in length and 2 mètres in width, and may be compared with the similar celebrated mosaic of the museum in the Villa Borghese, discovered in 1834 amongst the ruins of a Roman villa, near Torrenuova, and interesting for the costumes represented and the animals which the gladiators are combating. Many of the figures of the gladiators have names annexed, as in the mosaic of the Prætorian Camp

It may be well to mention that the Prætorian Camp, built by Sejanus, the Minister of Tiberius, outside the walls of Servius Tullius, was dismantled by Constantine, and three sides of the enclosure were included by Aurelian in his new wall. To this circumstance we are indebted for the preservation of the exact form of this celebrated camp, memorable as the scene of the principal revolutions during the first three centuries of the Christian era.

WELLS AND WINDMILLS.

BOTH wells and windmills date from remote antiquity. The origin of wells is simple enough to the mind; but of the origin of windmills there is no clue, and no record of the originator in the imperfect chronicle of inventors.

Those who have passed over fifty years of existence can look back to the days when all ordinary wells were dug, and steined with bricks, and can remember the wonderful impressions made upon their childish minds by the huge timber sweeps and canvas sails of the ponderous windmills which then capped nearly every hill. The relics of those mills and wells still are numerous, and afford comparison with the modern appliances which science is substituting for them.

Borings were then practised, and artesian wells were not unknown. Linings of iron, too, within them were taking their place. But the driven tube-well, afterwards introduced, was a novelty quickly accepted for both civil and military purposes. To drive by the force of a falling weight a tube into the ground, and in this way tap the water beneath the soil, was a simple and expeditious means to be used by itself or added in supplement to dug wells of larger capacity. Intermediate between the well and the windmill is the pump. The first transporter of water was doubtless the bucket. After hand use came the balanced rod, still used in Eastern lands.

But the pump retains the bucket, and in the force-pump the bucket is supplanted by the plunger. The modern advance in wells, pumps, and windmills was well displayed in the excellent contribution to the recent Breweries Exhibition, at the Agricultural Hall, by Messrs. Alfred Williams & Co., of Great Eastern-street—a firm which devotes special attention to these matters. The woodcut (Fig. 1.) shows the compactness and simplicity of the arrangements of their tube well. The driving-tube (*a*) has a flat-sided steel point (*b*) for penetrating the ground, and a steel plug (*c*) is screwed into its top end. Connected to this plug is an iron guide-bar (*d*), over which freely slides a heavy cylinder or weight (*e*). Attached to this weight are two cords or ropes (f^1 f^2), passing over two pulleys (*g g*), fitting on to the top of the guide-bar. By raising and dropping this weight the steel-pointed tube is driven blow by blow until the steel plug is nearly level with the ground. A fresh length of pipe is then screwed on, and the whole driven forward again

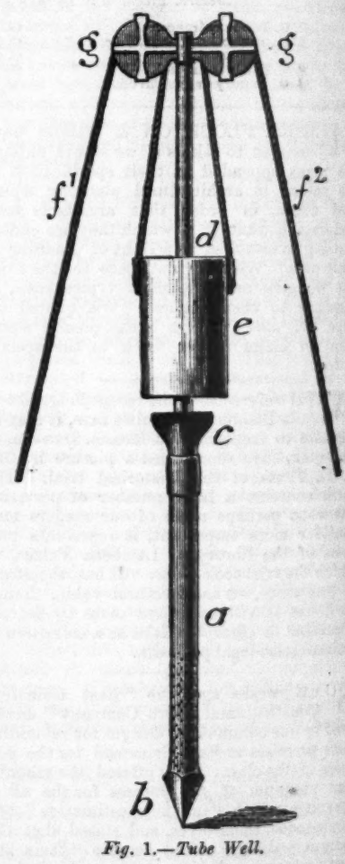


Fig. 1.—Tube Well.

into the ground by the falls of the heavy weight. In this way length after length is added until the depth of the water-bearing stratum is attained. The plug, guide-rod, and driving-tackle are then removed, and a hand or force-pump screwed into the well-tube in its place, Fig. 2. In first using the tube well, the water is lifted by the pump, and then allowed to fall back, thus causing a disturbance of the ground outside the point, and washing out a surrounding cavity free from dirt and small particles of mud or sand likely to choke the access of the water through the perforations into the tube. After this operation the water is drawn off by the pump perfectly free from grit, and clear. Experience has shown also the advisability of other provisions which will, under certain circumstances, be

needful; and it is to meet and counteract such minor matters that the ingenuity of inventors and makers is required.

The corrosion of the driving-tube perforations by ferruginous water is provided for in such cases by a special metal. For sandy water-bearing beds strainers are provided, and in this way all the requirements of successful and enduring results are perfected. The two chief advantages of the tube wells are that they are easily and cheaply executed, and that by their iron tubes all contaminations from surface

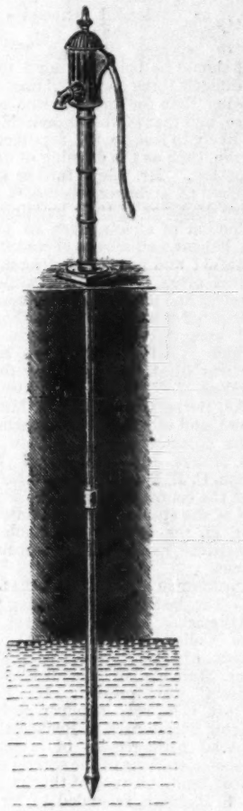


Fig. 2.—Tube Well and Pump.

water and deleterious soils are prevented. Tube wells are easily made up to 30 or 40 ft., and deliver from 1¼ in. tubes 150 to 900 gallons, and from 3 in. tubes from 450 to 3,000 gallons per hour. By connecting a number of tube wells, supplies from 10,000 to 50,000 gallons per hour can be obtained, the quantity, of course, being in degree influenced by the nature of the water-bearing strata. Tube wells can also be driven from the bottom of dug wells to increase the supply. Where the depth to the water-bearing strata is great, borings must be made. There are two modes available for this purpose. One is by the ordinary jumping tools, and the driving down of an iron tube by heavy falling weights; the other by the diamond circular drill. In the former the strength of the driven tube is of the utmost consequence, as, if the lining tube be broken, the only remedy is to drive a smaller tube inside it, which, of course, diminishes the water supply. Messrs. Williams have adopted a peculiarly advantageous form for their lap-welded wrought-iron tubes. They are shrunk in at the ends, and screwed on the outside. The tubes are then connected by steel sockets, which, owing to the shrinkage at the joint, come almost flush with the rest of the tube. The ends are butted against each other, thus giving great strength to the whole length of the lining. Consequently there is hardly any obstruction on the outside, and the driving is not only made more easy, but the danger of splitting under the blows of "monkey" or ram is greatly diminished.

In order of novelty, the Halladay windmill comes in front of the pumps. The first important improvement over the old sails was made in the last century, when the sweeps were fitted with series of movable boards instead of sails. These series were opened or closed by an iron rod to suit the strength of the wind. This had to be done by hand; and the extent of opening or closing either did or did not concur with the force of the breeze,—generally the latter, for seldom if ever are high winds without gusts. In the new windmill there is a remarkable scientific advance. There are no ponderous sweeps to this mill, no sails, no louvre-boards. The rays or "slats" which drive the mill are all radial, and are arranged between an outer and inner circle, the inner space of the face of the mill being open and unobstructed, except by the iron radial bars which extend from the centre to the iron ring of the outer circle, and which with it constitute the frame work of the mill. The standards which carry this mill are pivotted and run on a turn-table, so that the large vane, which is attached at right angles to the mill, always keeps the face of the mill in front of the air currents—no matter how they may vary in direction. The weather rays or slats also act automatically, and are so set or hinged as to slope away at greater and greater inclinations in accordance with the strength of the blast. In this way the greater force of the wind does not act destructively, but the mill maintains a nearly uniform power by its traverse of the varying inclinations of the slats. The opening action of these boards is directly actuated by the wind. The closing action is effected by counterweights, which bring the boards together whenever the wind slackens. Such mills are very much lighter and more effective than the old common sorts of windmills, which artists most adore in their broken-down and ruinous conditions. The new mills are not designed for pictorial delineations but for useful purposes, and range from 13 ft. diameter of fan,—giving, with wind at eighteen miles an hour, 2-horse-power,—up to 60 ft. diameter,—giving off in a like wind 40-horse-power. Such mills are applicable for water-works, corn-grinding, or machine-driving in shops and factories, or crane-hauling. They can also be used on the farm for chaff-cutting and other purposes. One of these Halladay mills is in use at the Uckfield Waterworks, in Sussex. It is erected on a timber skeleton tower 70 ft. high, and it forces water from an artesian-bored tube well for a height of 150 ft. to the reservoirs. Such pumping mills are also at work at Lechlade, in Gloucestershire, at the seat of Mr. H. Tollemache, M.P., at Nantwich; at Kirk Hammerton Hall; at Cloghan, in Ireland; at the hospital at King's Norton; and numbers of other places. Mills of this description are being erected in London for advertisements and sign purposes.

There is one over Messrs. Williams' own works which pumps water to a height of 70 ft. and drives a lathe and drilling-machine in the upper shop. Messrs. Carwardine, of the City-road, have also just had erected a larger one, with a vane 20 ft. long by 7 ft. broad, embellished with letters 2 ft. 6 in. high—a veritable rival to the soaring "sky signs" as an advertising medium.

The pumps are the intermediate link in the service to which wells and windmills can be most frequently and to best advantage employed. Those supplied by Messrs. Williams are of good quality and high efficiency. The prominent feature in their "Curtis" double-action pump is that it consists of two barrels and only one plunger. On the up stroke the water when lifted to the top passes through a double set of valves before reaching the delivery. On the down stroke the plunger forces the water to the bottom of the first barrel, and through an aperture into the second barrel. On rising to the top of it, it passes through a second set of valves to the delivery, by these means ensuring a continuous flow of water with hardly any friction.

"THE RELATION OF GROUND-WATER TO DISEASE."

At the opening meeting of the Royal Meteorological Society for the present session, Mr. Baldwin Latham, C.E., the President, delivered an address on this subject, as we briefly mentioned last week. The following is a summary of the paper:—

The pages of history show that when the ground waters of our own or other countries have arrived at a considerable degree of lowness, as evidenced by the failure of springs and the drying up of rivers, such periods have always been accompanied or followed by epidemic disease. In all probability ground-water in itself, except under conditions where it is liable to pollution, has no material effect in producing or spreading disease. As a rule, it is only in those places in which there has been a considerable amount of impurity stored in the soil that diseases become manifest, and the most common modes by which diseases are, in all probability, disseminated, are by means of the water supplies drawn from the ground, or by the admission of ground-air into the habitations of the people. It is found that the periods of low and high water mark those epochs when certain organic changes are taking place in the impurities stored in the ground, which ultimately become the cause and lead to the spread of disease. Mr. Latham defines "ground-water" as all water found in the surface soil of the earth's crust, except such as may be in combination with the materials forming the crust of the earth. It is usually derived from rainfall, by percolation; and it is also produced by condensation. In dry countries, ground-water is principally supplied by the infiltration from rivers, as, for example, in the Delta of the Nile.

The absence of water passing into the ground for a long period naturally leads to the lowering of the free ground-water-line, and may lead to the drying of the ground above the water-line; and it is curious to note, with reference to smallpox, that the periods marking the epochs of this disease are those in which there has been a long absence of percolation, and a consequent drying of the ground preceding such epidemics. On the other hand, smallpox is unknown at such periods as when the ground has never been allowed to dry, or is receiving moisture by condensation or capillarity.

The study of underground water shows that certain diseases are more rife when waters are high in the ground, and others when the water is low. The conditions that bring about and accompany low water, however, have by far the most potential influence on health, as all low-water years are, without exception, unhealthy. As a rule, the years of high water are usually healthy, except, as often happens, when high water follows immediately upon marked low water, when on the rise of the water an unhealthy period invariably follows.

Mr. Latham has found that those districts which draw their water supplies direct from the ground are usually more subject to epidemics and disease than those districts in which the water-supply is drawn from rivers supplied from more extended areas, or from sources not liable to underground pollution. In the case of Croydon, one portion of the district (under three-fourths) is supplied with water taken direct from the ground, whilst the remaining portion is supplied with water from the river Thames. It is curious to note that even so recently as 1885 the zymotic death-rate in the districts supplied with underground water was twice as great as in that part of the district supplied from the Thames; and in this particular year 41 deaths from smallpox occurred in the district, not one of which was recorded outside the district supplied by the underground water.

Mr. Latham, in his address, dealt largely with zymotic diseases as affected by ground water, and showed that cholera ordinarily breaks out when there is the least ground water; a high air and ground temperature is also necessary for its development, and as a rule the low-lying districts are favourable to the production of these high temperatures. Smallpox is almost always preceded by a long period of dryness of the ground, as measured by the absence of percolation. Typhoid fever is most prevalent after a dry period, and when the first wetting of the ground or percolation from any cause takes place. The condition essential to the development of diphtheria is a damp state of the ground marked by extreme sensitiveness to percolation of rain. Scarlet fever follows the state of the dryness of the ground which is essential for its development, and it occurs in the percolation period. The conditions that precede smallpox are those favourable for the development of scarlet fever, and, like smallpox, the dampness of the ground for any considerable period in any particular locality, may check its development or render it less virulent, and it is most rife in low-water years. Measles are least prevalent at the low-water periods, and mostly rife at and near high-water periods. Whooping-cough follows the percolation period in its incidence, increasing with percolation, and diminishing as the waters in the ground subside. Diarrhœa is generally more prevalent in a low-water year than in other years; that is, with a very much colder temperature in a

low-water year there is a very much higher death-rate from this disease.

Mr. Latham finds that the general death-rate of a district is amenable to the state of the ground-water, years of drought and low water being always the most unhealthy.

THE SESSION 1891.

Amongst the miscellaneous bills for which application is to be made are the following:—

The Corporation of London: for the appointment of a public authority, by name of "The London Water Commission," to improve and regulate the supply, and diminish the cost, of water in London and adjoining places—with, if thought fit, a free supply to public baths, wash-houses, and hospitals—and for acquiring existing or future waterworks, and the right of taking water within the water-sheds of the Thames and Lee. The commission to consist of representatives of the Corporation, the London County Council, the Conservancy boards, and of other county, municipal, and local authorities.

By the Channel Bridge and Railway Company (Harbour Works): for the construction of two piers or breakwaters, 500 and 580 yards long and 440 yards apart, with subsidiary works, at St. Margaret's Bay, a pleasant retreat at foot of an opening in the cliff near to the South Foreland.

By the Gas Light and Coke Company: for further powers to more readily recover for consumption of gas, and for authority to enter premises in order to cut off the supply, and thus avoid, as far as possible, the breaking up of streets and roads for that purpose, together with enforcement of penalties for resistance against such lawful entry.

The "Trustees and Guardians of Shakespeare's Birthplace" will ask for enlarged powers to deal more satisfactorily with their accumulated capital than, as they are advised, the terms of their existing trust deed now permit. They seek for a conveyance to them of the property in Henley-street and elsewhere, at present vested in the Stratford-on-Avon Corporation, together with the Library and Museum. The site has been preserved of Sir Hugh Clopton's "Great House," more commonly known as "New Place," which, having been rebuilt, was, together with the mulberry tree, ruthlessly pulled down in 1759 by Francis Gastrell, vicar of Frodsham, to escape annoyance by visitors: some remains of the cellars and foundations are shown there. The house in Henley-street was restored by Mr. Edward Barry, architect, and the earliest extant drawings of the building were followed. The trustees further seek to purchase, as opportunity may offer, Mary Arden's house at Wilmcote, and Ann Hathaway's cottage at Shottery. Shakespeare demised a life interest in the house of his birth to his second sister Joan. Its subsequent history is traced in the late Mr. Halliwell-Phillips' "Outlines," appendix to vol. i. It was bought, in 1847, for 3,000*l*.

Notice has been given for a Bill to change the constitution of the master, wardens, and commonalty of the watermen and lightermen of the Thames, known as the Watermen's Company, and, if necessary, to dissolve the Corporation and distribute its property. The Bill proposes to make radical changes as touching the examination and licensing of lightermen and watermen employed on the river between Lower Hope Point, near to Gravesend, and Teddington Lock, and to repeal or modify certain existing tolls, rates, exemptions, and rights of ferry.

LECTURES ON HOMERIC GREECE.

V. AND VI.

In his fifth lecture,* Dr. Leaf dealt with the question of Homeric art. The Homeric poems yield us evidence respecting the sources of art, its subject, and the processes of technic, but no description can enable us adequately to judge of *style*, by which alone the development of art can be traced. Moreover, the Homeric record is deficient as regards many branches of art respecting which we should have been glad of material for comparison with the monuments,—notably pottery, engraved gems, terra-cottas, and wall-painting. The importance of Phœnician influence had, Dr. Leaf thought, been overrated. He showed, however, though with only partial acceptance, Mr. Murray's restoration of the Shield of Achilles, and noted especially the courses of cyanos. Lapis lazuli was rare then as now, and this cyanos was no doubt used as a substitute; it still remained a puzzle as to how exactly the courses were inlaid. A subject of more immediate interest is the evidence as to the existence previous to and contemporary with the conventionalised Oriental style of a more naturalistic type of art, as shown in the wall-painting of Tiryns, and still more noticeable in the Vaphio cups. As to the famous man and bull of Tiryns, Dr. Leaf rejected any attempt at mythological interpretation, and held, as we believe most archæologists now do hold, that the scene was, like those in the Vaphio cups, one from daily life,—a bull capture. Very fine reproductions of the Vaphio cups were shown on the screen, and fully discussed.

The last (sixth) lecture dealt with the question of the steps by which Homeric developed into Classical Greece. Homeric Greece was later, acoording to Dr. Leaf, than the civilisation of Mycenæ. Iron, for example, in Homer is freely used, not, indeed, for weapons, but for tools. None is found at Mycenæ, though, as the lecturer warned his audience, it might have been present, and have disappeared through rust. Again, the remains of Hissarlik and Mycenæ are of wholly different epochs, whereas Homer represents Greek and Trojan as in the like stage of civilisation; but it must be remembered he is avowedly narrating events of an elder world. On the whole, recent excavations went to show that however poetical and imaginary the *story* of it might be the war was a real one. Dr. Leaf alluded to the theory,—now, let us hope, finally exploded, but once widely popular,—that the Trojan heroes were (solar) mythological persons. He noted, in opposition to this, the interesting fact that in the early kernel of the poem, the "Wrath," the gods play but a small and episodic part, in the later portions they are essential actors; this does not look like mythological *origin*. Setting aside the question of the relative ages of the Mycenæ remains, and the poems they have thus in common, that both evidently stand at the *end* of a long civilisation abruptly brought to a close. In the poems the tribal names are those of the Achæans, Argives, Danaans, when history dawns these have disappeared, we find instead Æolians, Ionians, Dorians,—the great question is, how came all this about. Of the Dorians we know that they were a mountain race pushed south and westward, and, entering the Peloponnesus from the west, where they crowded out the Achæans. The Achæans crossed to Attica and over the Ægean Sea; there in the north they became Æolians. The south, as had been seen in the first lecture, was mainly Dorian. Midway came the Ionians,—the most puzzling of all the races, and yet the most important, because, when history dawned, we find them in possession of the Homeric poems, written in their dialect. Briefly, Dr. Leaf concluded, and the conclusion is of vital interest both for history and mythology, that the Ionians are the *Pelasgians Hellenised by the Achæans*. The ancient, effete, aristocratic civilisation of the Achæans fell before the incoming Dorians, the hardy mountaineers, but the old, autochthonous Pelasgians, with their primitive habits and their chthonic cults, were strong to maintain themselves anew when the war had broken and past. The far-reaching consequences, if interesting now,—especially for mythology,—cannot be discussed here. A hearty vote of thanks to Dr. Leaf for his interesting lecture was accorded at the close. The subject of Homeric mythology was taken up by Miss Harrison on Wednesday. We shall give a short *résumé* of Miss Harrison's four lectures at the close of the course.

* For brief reports of the previous lectures see pp. 303, 345, 405, *ante*.

ARCHITECTURAL SOCIETIES.

Birmingham Architectural Association.—A meeting of this Association was held at the Midland Institute on Tuesday evening last, and was attended by a good number of members, the President, Mr. T. Naden, being in the chair. As it was the opening meeting of the session, some formal business was transacted at the commencement, during which Mr. Herbert R. Lloyd, hon. sec., stated that the classwork of the session had made a better start than had been the case for some years, and that there was every prospect of the session being in every way a success. The business was followed by a paper on "Architectural Drawing," read by the Vice-President, Mr. W. Hawley Lloyd, in which he laid emphasis on the fact that architectural drawings should not be regarded as pictures, whether they were drawings of new or studies of old buildings, and that in either case their use should be borne in mind, and they should be made to accurately and truthfully show the building as it existed. The author deprecated the making of pretty sketches in place of definite studies of old work, and quoted the drawings of Sir Christopher Wren, instancing his studies of the domes of Florence and St. Peter's at Rome, as splendid examples of what such drawings should be. With regard to working drawings, Mr. Lloyd said that it should be borne in mind that it was a more difficult thing for a workman to interpret a drawing than for the man who had made it to do so, and that it was undesirable to do anything likely to lead to the mystification of the workmen, such as the drawing of details across one another. Mr. Lloyd further said that he considered all architects should, in making perspective drawings of their buildings, avoid the introduction of effects, such as the weather-stains, lichens, and mosses of centuries, as being untruthful; and he protested against the perspectives often seen, which, whilst clever in themselves and as drawings, represented as old and weather-worn a building which for years would keep the spick-and-span appearance in which it left the builder's hands. The paper was illustrated by many fine drawings by Messrs. J. F. and A. E. Barnsley, W. H. Bidlake, Herbert Railton, A. B. Mitchell, C. E. Mallows, and others, many of them kindly lent for the occasion. A discussion followed in which Messrs. J. Cotton, W. H. Bidlake, W. Henman, C. E. Bateman, and others took part, and in the course of which the President and others of the speakers congratulated the Association on the change by which the use of the Institute room had been secured for the meetings.

Manchester Architectural Association.—The last ordinary meeting was held at the Athenæum on the 19th inst. (Mr. A. H. Davies Colley in the chair), when the members of the "Association of the Manchester Students of the Institute of Civil Engineers" were present. Mr. S. S. Platt, A.M. Inst. C.E., read a paper entitled "Notes on Paving Stones used at Rochdale," illustrated by special arrangement of lantern, showing microscopic sections of the several stones under polarised light. A vote of thanks, proposed by Mr. J. S. Hodgson, seconded by Mr. Greatorex, and supported by the chairman, terminated the meeting.

Manchester Society of Architects.—The annual dinner of this Society took place on the 19th inst., at the "Queen's Hotel." Mr. A. Waterhouse, R.A., President of the Royal Institute of British Architects, the Dean of Manchester, Mr. Woolner, R.A., Mr. Chadwick, President of the Manchester Architectural Association, and Mr. J. H. P. Leresche were present as guests.

Architectural Association (London).—At the meeting of the Advanced Class of Construction and Practice on Wednesday evening last, the discussion on Mr. Francis Hooper's paper, read at the last meeting, on Artisans' Dwellings, was resumed. Dr. Shirley F. Murphy (Medical Officer to the London County Council), Mr. P. Gordon Smith (Architect to the Local Government Board), and Messrs. Keith D. Young, Henry W. Dobb, J. Barry O'Callaghan, and G. N. Hooper took part, in addition to members of the class. The remarks elicited were of the most practical character, and cordial votes of thanks were passed to the reader of the paper and the special visitors.

COMPETITIONS.

The London County Council's Proposed Municipal Lodging-house for 320 Men.—In this competition, we are informed that seventy-five designs have been received; and the drawings are now being arranged for the inspection of the Assessors, Mr. Ewan Christian, and the Architect to the Council.

The Country House: (What Our Architect has to put up with).—Fair client: "I want it to be nice and baronial, Queen Anne and Elizabethan, and all that; kind of quaint and Nurembergy, you know—regular Old English, with French windows opening to the lawn, and Venetian blinds, and sort of Swiss balconies, and a loggia. But I'm sure you know what I mean!"—*Punch*.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—At the meeting of this Association on the 19th inst., Mr. G. W. Grover, F.S.A., in the chair, the Rev. Carus V. Collier announced the discovery of a vase of glazed ware, filled with Roman coins, at Shipley, during the construction of the railway there, and he exhibited some of the best-preserved examples. These are of Galberius, Tetricus, etc. The hoard was taken possession of by the workmen, and but few of the coins have been recovered. Mr. C. Brown, Mayor of Chester, sent for exhibition some photographs of the remarkable Roman column which was found *in situ*, during some recent building works on his property in Westgate-street. The column has now been preserved on the spot where found, by the construction of an arch over it to carry the new building. The Rev. C. G. R. Birch reported the discovery of a beautiful brass, during the restoration of Gedney Church, Lincolnshire, where it was found beneath the floor. It represents a female figure, in the costume of the fourteenth century. A reproduction of a rubbing, made by Mr. Beloe, was exhibited. The first paper was "On the Coped Stones of Cornwall," by Mr. A. G. Langdon. After remarking that ancient sepulchral monuments of the form of an inverted boat had not previously been observed in Cornwall, although other examples are known in the North of England, and one or two in Wales, the lecturer proceeded to point out, by the aid of some beautiful drawings, and by full-sized rubbings, the peculiarities of the examples cited, which are three in number, respectively at St. Tudy, Lanivit, and St. Buryan, the latter being a fragment only. They are worked in granite, and are covered with interlaced and key patterns of pre-Norman date, agreeing in style with other examples of interlaced work on the Cornish crosses. The second paper was by Dr. Russell Forbes, of Rome, read, in the author's absence, by Mr. de Gray Birch, F.S.A. It was on a charm against "The Evil Eye," which is depicted on a tesselated pavement of great beauty recently found at Rome. An owl, representing "The Evil Eye," is surrounded by other animals representative of protecting deities.

GLASGOW ARCHÆOLOGICAL SOCIETY.—The annual meeting of the Glasgow Archæological Society was held in the Society's Rooms, Bath-street, on the 21st inst. Mr. J. Honeyman, President, occupied the chair. The report by the Council showed that the number of members admitted in 1889-90 was thirty-four, as against thirty-three last year. The Society had sustained the loss during the past year of two distinguished honorary members, viz., Mr. John Clayton, F.S.A., and Mr. C. Roach Smith, F.S.A., and of several ordinary members, including the Earl of Glasgow and Mr. John Carrick, City Architect. The present membership, after deducting deaths and resignations, was nine honorary and 310 ordinary members. Messrs. William Wilson, A. M. Scott, A. B. M'Grigor, and J. O. Mitchell retired at this time from the Council. It was recommended that Messrs. Scott and Mitchell be re-elected, and that Professor Story, D.D., and Robert Guy should be elected as new members of Council. The Council further recommended the re-election of Professor Ferguson, LL.D.; Mr. C. D. Donald, F.S.A. Scot.; and Dr. Murray, as Vice-Presidents; of Mr. Dalrymple Duncan and Mr. Black, as hon. secretaries; and of Mr. Marwick as hon. treasurer; and the re-appointment (pending reorganisation) of the Society's committees. The financial statement showed that there was a balance in hand at present of 222*l.* 9s. 6d. The Chairman, in moving the adoption of the report, said that there was still room for the Society to grow in Glasgow. He was glad to see that the funds were larger this year, and that would enable them to use more money in the way of publication than formerly. The Society of Antiquaries in Glasgow were engaged in a work which would be facilitated by the co-operation of other societies, and by individual members,—namely, a complete illustration of all the sculptured stones in Scotland. The report was adopted. The Most Rev. Archbishop Eyre, D.D., afterwards addressed the Society on "The Episcopal Seals of Glasgow."

ELECTRIC LIGHTING AT CARDIFF.—The Cardiff Corporation have given notice of their intention to apply to the Board of Trade before December 21 next for a Provisional Order under the Electric Lighting Acts, 1882 and 1888, to enable them to light the principal streets of the town with electricity.

THE SURVEYORS' INSTITUTION.

THE following gentlemen have been reported by the scrutineers as elected to various classes of membership, at the ballot of Saturday, November 22, 1890:—

As *Fellows*—Stephen Bailey, Nynehead, Wellington, Somerset; Robert Buck Broster, Keighley; George Buckley, Halifax; Henry Philip Chalk, Linton, Cambs; William Clarkson, Poplar, E.; George Radcliffe Cobham, Gravesend; Samuel Hood Cowper Coles, Crickhowell; Brian Bollans Hird Cowgill, Bradford; Henry Brook Dransfield, Huddersfield; Edward Fillingham, Hull; George William Finn, Faversham; Thomas Hills Forsyth, Newcastle-upon-Tyne; Edwin Fox, jun., Gresham-street; Arthur Richard Gradwell, Blackburn; Thomas Thornton Green, Poultry; William Benjamin Hebditch, South Petherton, Somerset; Isaac Matthews Jones, Chester; John Kidwell, Rochester, Kent; Edward Osmond, Upton Pyne, Devon; William Henry Parker, Worcester; William Parkin, Babworth, Retford, Notts; Albert Woodward Parry, Reading; Frederick Cecil Parsons, Brighton; Frederick Atkinson Powell, Kennington-road; Arthur Stirling Pridmore, Junction-road; Peter Purves, Huntingdon; Henry Adair Rawlins, Queen Victoria-street; Ithel Treharne Rees, Cardiff; Richard George Scriven, Castle Ashby, Northampton; William Scroggs, Kidlington, Oxford; Harry Samuel Senior, Sturminster Newton, Dorset; Harry Russell Smith, Bradford; Edward Tidman, Victoria-street, S.W.; Joseph Harling Turner, Kilmarnock; Edward James Turton, Horkstow, Barton-on-Humber; John Allen Waddington, Bayfordbury, Hertford; Francis Elliott Walker, York; Albert Mellor Walsh, Macclesfield; Herbert Fuller Waring, Maidstone; Herbert Walter Williams, Norwich; Stephen Woodbridge, jun., Brentford; Lionel Burnet Woodforde, Thetford, Norfolk; William Booth Woodhead, Bradford; and Robert Walter Wordsworth, Whitemoor, Ollerton, Nottinghamshire.

As *Professional Associates*.*—Francis Reginald Armytage, Pump-court, Temple; Cecil Hugh Aylen, New Broad-street; Frederick Herbert Bancroft, Manchester; Thomas Barclay, Birmingham; Maurice Frederick Beadel, Gresham-street; Arthur Body, Chippenham; Frederick Edward Boulting, Mornington-road, N.W.; Frederick Henry Brackett, Cheapside; George William Cobham, Gravesend; Frank Minshull Elgood, Wimpole-street; Francis Ellis, jun., Trafford-park, Patricroft, near Manchester; William Forrest, Penarth; Arthur Norman Garrard, Cannon-street; Alexander Goddard, Leicester; Alexander Ernest Green, Ealing; James Henry Hodgkinson, Stalybridge; Gilbert Plantagenet Mitchell Innes, Chester; Walter Robert Kay, Bury, Lancs.; Graham Harley Mould, Thornton Heath, Surrey; George Osenton, jun., Mount-street; Edward John Partridge, Fleet-street, E.C.; Joseph Perkins, Edgbaston, Birmingham; Richmond Pinder, Upper Baker-street; Herbert Edward Prall, Dartford, Kent; Frank J. Ruddle, Spring-gardens, S.W.; Edwin Savill, New Broad-street, E.C.; Charles Frederick Slater, Richmond, Surrey; James Frederick Kemp Smith, Market Harborough; Walter Wadman Snailum, Trowbridge, Wilts; William Wilton Rix Spelman, Norwich; Ernest George Verity, Gray's-inn-square; Hugh Calthrop Webster, Gresham-street; and Charles Bruce Wood, Irene-road, Parson's Green.

As *Associates*:—Mr. Reginald Ward, Solicitor to the London County Council, Spring-gardens, S.W.; and Mr. John Wrightson, College of Agriculture, Downton, Wilts.

* All having passed the qualifying examination.

At the ordinary general meeting of the Institution held on Monday evening last, Mr. T. A. Dickson (Fellow) read a paper on "The Labour Question as Regards Agriculture."

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday last, Sir John Lubbock in the chair. After the confirmation of the minutes, a vote of condolence with the late Chairman, Lord Rosebery, in his sad bereavement, was unanimously assented to by all the members rising in their places.

Resignation of the Solicitor.—The Standing Committee reported that the Chairman of the Council had received a letter from Mr. Reginald Ward, the Solicitor, resigning his office, on the ground of failing health, and asking to be allowed to do so under the provisions of the Superannuation Act. Mr. Clarke (Chairman of the Improvements Committee), Mr. Hutton (Chairman of the Building Act Committee), and Mr. Charles Harrison (Chairman of the Parliamentary Committee), having spoken of Mr. Ward's long services, and of his ability and courtesy, it was resolved to "accept the resignation with regret," and it was referred to the new General Purposes Committee to consider the question of pension.

Tenders and Conditions of Contract.—The first paragraph of the Report of the Main Drainage Committee was as follows:—

"The Council, in September last, issued an advertisement inviting tenders for engines, boilers, and machinery, to be erected at the Crossness Outfall Works. The tenders were to be received by the Council on October 21, and would in the ordinary course have been referred to us. No tender, however, was sent in, although four firms had applied for copies of the plans and specification. We had a letter from Messrs. James Watt & Co., stating that they were unable to send in a tender for the work, as, having regard to their engagements, the time named for the completion, six months, precluded them from undertaking such a contract. After conferring with the Engineer, we determined to re-advertise the work, and in doing so, to extend the time allowed for the completion of the contract from six months to nine months. We also decided to modify the clause in the specification providing that the contract should not be assigned or underlet, by inserting the words "or make a sub-contract,' and the words 'without the previous consent of the Council,' and omitting the following words:—'Nor shall the contractor make a sub-contract with any workman or workmen for the execution of any part of the cast-iron, wrought-iron, or other metal-work, timber, brick-work, concrete, ground-work, masonry, or any other work appertaining to this contract, but . . . . to employ . . . . own workmen for the labour thereof, who are to be paid directly by the contractor.' We believe that, in the adoption of that course, we acted within the powers conferred upon us by the Council; but having regard to the decision of the Council on Tuesday last, upon the report of the Special Committee on Contracts,* we think it desirable to report the above circumstances for the information of the Council, and we accordingly do so."

The report was received.

Bishop's-meadow, Fulham.—The Parks Committee and the Improvements Committee each presented reports on this subject. The Report of the Parks Committee was as follows:—

"On October 28 last, we reported to the following effect, viz.:—

'On May 25, 1889, the Vestry of Fulham informed the Council that the Ecclesiastical Commissioners were willing to give this twelve acres of land, which adjoins the Bishop of London's Palace at Fulham, as a recreation-ground, and the Vestry asked the Council to lay out the land and build a wall along the portion of it known as the Bishop's-meadow, which lies between the palace grounds and the Thames. The question of the river-wall we deemed to be one for the consideration of the Improvements Committee, who might at some future date have to deal with the embankment of the Thames generally at this point, and we accordingly referred the matter to them, and they are reporting on it to the Council. Meanwhile, we have gone into the question of laying out the grounds, and have applied to the Vestry in order to ascertain whether they would contribute to the cost. This they have agreed to do to the extent of 1,000*l.*, the total outlay being estimated at 2,500*l.* They are also prepared, with the concurrence of the Ecclesiastical Commissioners, to convey the lease of Bishop's-meadow (5 acres) to the Council, and the Commissioners will transfer to the Council direct the lease of the West-meadow (7 acres). The leases are both for 999 years, and the two meadows form the recreation-ground of 12 acres. We have visited the locality on more than one occasion, and are fully impressed with the public advantage which will accrue by securing the property. We may add that the conditions attached to the gift are that a river-wall shall be built, and that the ground shall be laid out and maintained by the Council as a public recreation-ground,'

and we recommended that, subject to an estimate being submitted to it by the Finance Committee as required by the Statute, the Council should authorise an expenditure of 1,500*l.* for the laying-out of Bishop's-meadow and the West-meadow, Fulham, as a public recreation ground, to be maintained by the Council in perpetuity. The Council referred this recommendation back to us for the Valuer to report as to the value of the land offered as an open space conditionally. The Valuer's report is to the effect that, subject to the above-named conditions, he does not see that any value whatever attaches to the land. If sold free from restriction, he states that it would be worth 750*l.* per acre, or 9,000*l.* for the whole. Taking into consideration the facts that sooner or later an embankment will have to be constructed, and that owing to the rapid increase in building, the necessity for open spaces in Fulham is becoming greater every year, we are of opinion that the Council should accept the gift, and we repeat our recommendation, viz.—

'That, subject to an estimate being submitted to it by the Finance Committee, as required by the Statute, the Council do authorise an expenditure of 1,500*l.* for the laying-out of Bishop's-meadow and the West-meadow, Fulham, as a public recreation-ground, to be maintained by the Council in perpetuity.'"

* See *Builder* for November 15, p. 385, and November 22 p. 408.

The Improvements Committee's Report on the same subject was as follows:—

"On July 26, 1889, the Parks Committee referred to us the question of the construction of a river wall on the southern side of Bishop's-meadow, Fulham, which was proposed to be laid out as a public recreation-ground. On January 29 last we advised the Parks Committee as to the description of wall which we would recommend. On February 21 last, however, the Parks Committee informed us that in its opinion the formation of the wall should be carried out as a Metropolitan improvement, and should therefore be dealt with by us, upon which we suggested that the Parks Committee should take up a report to the Council dealing with the laying out of the land, so that instructions might be given by the Council, if it were considered desirable, for us to proceed further in the matter. But the Parks Committee now asks us to submit a report dealing with the river wall, and states that it will at the same time report upon the question of laying out the land. Having carefully considered the subject and viewed the locality, we are of opinion that, if the Council resolves to acquire and lay out the land at Bishop's-meadow as an open space, the erection of the river wall will be indispensable. We consider that the wall should be constructed of concrete blocks, so that in the event of the Council at some distant date deciding to embank the river with a similar wall up to this point, there may be some uniformity of appearance. The estimate for building the wall with concrete blocks is 8,800*l*. We recommend—

'That, subject to an estimate being submitted by the Finance Committee and approved by the Council as required by the Statute, and subject to the Council agreeing to acquire and lay out the land as an open space, the Council do seek powers in the next session of Parliament to construct an embankment wall at Bishop's-meadow, Fulham, such wall to be formed with concrete blocks and with a curved batter to the face.'"

After a long discussion, in the course of which Col. Edis, Mr. Roberts, and Mr. Burns strongly condemned the proposed use of concrete blocks for facing the proposed embankment wall, the Parks Committee's report was adopted, but the Improvements Committee's report was referred back for further consideration.

After transacting other business, the Council adjourned.

Illustrations.

THE CHÂTEAU DE MAINTENON.

IN his work entitled "Days near Paris," which was reviewed in the *Builder* some time since, Mr. Augustus Hare completely forgot the existence of the Château of Maintenon, which is one of the most beautiful works of French architecture of the sixteenth century. We supplied the deficiency briefly in the article in question, but our readers may be glad to have a further account and illustration of this picturesque building.

Maintenon is a small town on the Eure, about 69 kilomètres from Paris by the Bretagne railway. The château, which is still the property of the Noailles family, has held many illustrious guests. The "Grand Monarque" himself was there several times; Racine stayed there for some time, and composed there, for the ladies of St. Cyr, his two tragedies of "Esther" and "Athalie."

The château, "restored" some years ago, was built by Jean Cottereau, treasurer of finance to Louis XI., Charles VIII., Louis XII., and Francis I., and whose daughter married in 1526, Jean d'Angennes, lord of Rambouillet. From the d'Angennes family the property passed into the hands of the Marquis de Villeray, who sold it to Louis XIV. in 1674, who made a present of it to Françoise d'Aubigny, Marquise de Maintenon, his wife by a morganatic marriage. She gave it as a wedding gift to her niece on the marriage of the latter with the Duc d'Ayen, son of the Maréchal de Noailles, ancestor of its present possessor.

The situation of the château is beautiful. There is a fine park round it, of which the gardens were laid out by Le Nôtre. Two rivers, the Voise and the Eure, as well as numerous canals, divide the meadows, which are connected by about thirty bridges at different points.

The château itself forms a picturesque irregular mass of buildings, the effect of which is heightened by the fine warm colouring of the brickwork. The arms of the founder, Jean Cottereau, are still to be seen on the turrets flanking the entrance-gate. Internally there is to be noted a pretty chapel with some fine sixteenth-century windows representing the scenes of the Passion. One façade, with a *cour d'honneur* before it, looks towards the principal square of the town; the other, which we have shown, is the principal façade towards the park side, which in the general view from gardens, also given, is nearly lost behind the projecting wing. The park façade is by far the most interesting in its details, although perhaps in another sense the one towards the town would be more correctly called the principal façade. The wing which extends between the large square tower on the left, and the entrance gateway, was built by Madame de Maintenon, who built also the right wing, containing a fine gallery which the present Duc de Noailles has had splendidly decorated. This gallery contains the portraits of all the known members of that family since the crusades. The apartments commonly occupied by Madame de Maintenon herself are among the sights of the building, and still contain much of their ancient furniture and hangings, as also her portrait by Mignard.

UNITED METHODIST FREE CHURCH, MANOR PARK, ESSEX.

THIS church, now being erected, consists of a nave and aisles, 40 ft. across, intersected by aisled transepts of equal height and width. Seating is provided upon the ground-floor for 475 people, the seats themselves radiating in the large square formed by the junction of nave and transepts, so that all the congregation look directly to the pulpit, placed in the centre of the building.

The communion platform will have choir seats on either side, and behind the pulpit is the organ chamber, carried up to the full height of the church. There are two large vestries, under one of which is the heating chamber.

The turret and porch on the opposite side lead into a lobby extending the whole width of the building. Materials,—red bricks, Bath stone, green slates, and lead for flats and spirelet. The contractor is Mr. H. J. Carter, of Grays, Essex; and the building is being carried out from the designs and under the superintendence of Messrs. Potts, Sulman, & Hennings, of London, their designs having been chosen in a limited competition.

INTERIOR ST. BARTHOLOMEW THE GREAT, SMITHFIELD.

THIS interior view, from a small oil-painting executed by Mr. W. D. West, shows one bay of the Norman arcade on the south side of the church. It may be of interest to some of our readers to have an illustration of one of the few pieces of Norman architecture remaining in London.

ST. IVES BRIDGE CHAPEL.

IN continuation of the illustrations of bridge-chapels (Wakefield and Rotherham) which we published last week, we now illustrate the one at St. Ives, Huntingdonshire. The bridge is about 14 ft. wide, with triangular recesses at intervals over the piers. The chapel was about the same size as that at Rotherham—the front measures 15 ft. in width. It differs in plan from the other two, having an apsidal termination eastward. The original parapet has been removed, and a modern brick house of two stories has been built over it, following the outline of the chapel. The height to the string-course which formed the lower member of the parapet is 5 ft. above the parapet of the bridge. The house is now used as offices, and modern windows are inserted. There are traces of a gable against the east wall, but whether original or a mark of a later building it is difficult to say. The bridge itself is an interesting example, and near it are some good houses of later date.

Both the chapels at Rotherham and St. Ives are of the fifteenth century.

OAK CHEST, BRANCEPETH CHURCH.

THIS finely-carved chest is of fourteenth-century work, probably Flemish. The carving is clean and sharp, cut to about the same depth as the tracery, about a half-inch sinking. The panels at the ends are plain, but those of the lid are stop-chamfered. The lock-plate is modern. Brancepeth Church, in which the chest is kept, is about five miles from Durham.

The illustration is from a drawing by Mr. W. G. Footitt.

"THE HUT," HATCH END, PINNER.

"THE Hut" is from the designs of Mr. James Ransome, and has been built for Lady Watkin Williams on a picturesque site about two miles from the village of Pinner. The lower part of the building is in red brick, the mullions and transoms of the windows being of wood painted white. Above the first-floor level the walls are of timber construction, with black-tarred posts and light-yellow distempered rough-cast. The roof is hung with red tiles. The house consists of three reception-rooms on the ground-floor, all approached from the hall, and opening on to the loggia, which faces south; seven bedrooms, a small boudoir, and the usual offices, bath-room, &c. The panelled dado in the drawing-room is of wood painted white, and is 3 ft. 6 in. high. Above this level the walls are hung with a dark "tapestry paper." At one end of the room a large arched recess has been formed for the accommodation of a grand piano. The building of "The Hut" was completed some eighteen months since, Mr. Batchelor, of High-street, Harrow, being the contractor.

Books.

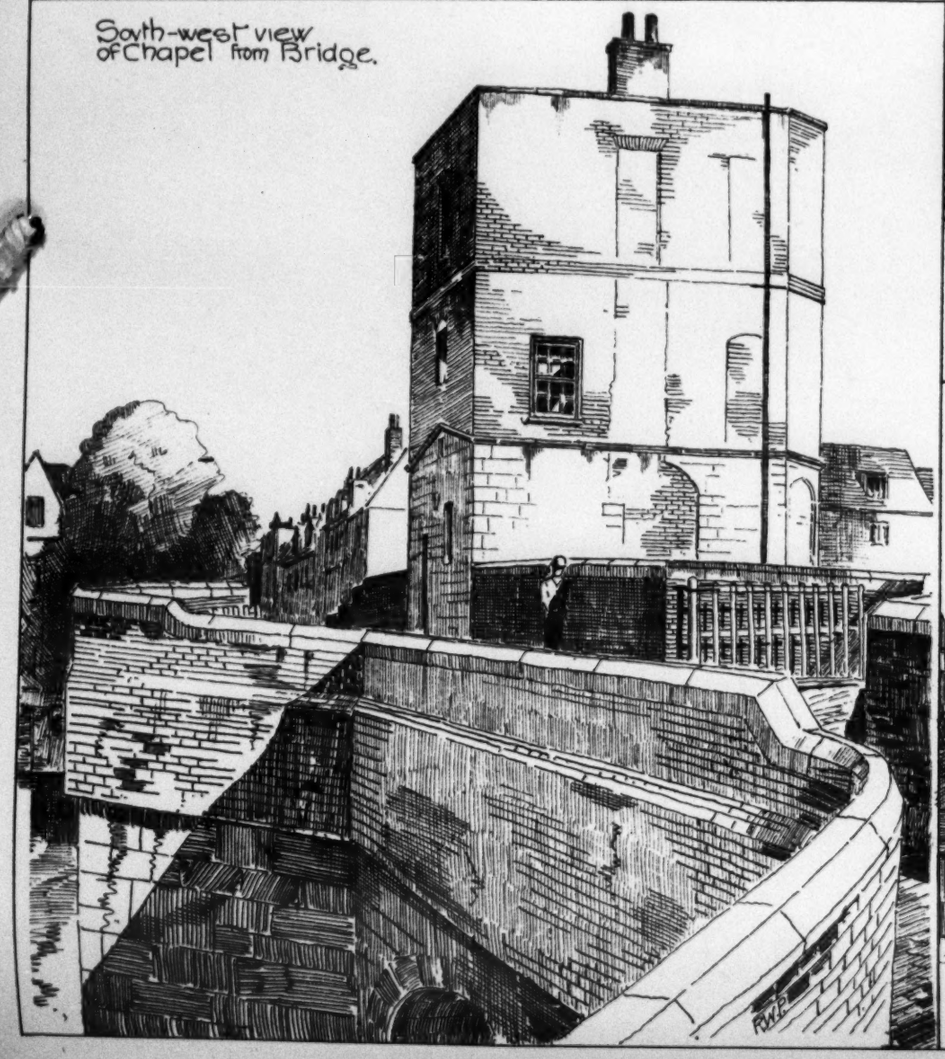
Murray's Handbook for Durham and Northumberland. London: John Murray, Albemarle-street. 1890.

AT the risk of appearing ungracious, we may point out the omission of a few facts in the revised edition of Murray's really good handbook relating to Durham and Northumberland, which should be rectified in the next issue; and likewise call attention to a few incorrect statements that it will be well to put right when the same occasion arrives. It is, in the main, an excellent handbook, all the same, full of matter, light to hold, and easy to read; and as it is furnished with two good maps, deposited in two pockets in the cover, it is a very desirable item in the equipment of a traveller in the part of the kingdom to which it refers.

It must be premised that the plan of the work is a series of excursions, and that it is only the places within easy distance of these routes that are mentioned. By this arrangement several very interesting buildings are omitted altogether. Woodhorn Church is one of these. This is an ancient church of Saxon foundation, with Saxon fragments in it, and additions of nearly every subsequent century, and it is within a very short walk of Newbiggen Church, of which a brief description is given. Duddo Church is another omission, though the village is mentioned. Byrness Church, the smallest in the archdeaconry of Lindisfarne, has no word, though Byrness has four lines of notice of Door Tarn in a chasm in a cliff two miles away. Ilderton Church is not mentioned, though a mausoleum in the churchyard has a line. Ancroft Church, which has the singular feature of a fortified Plantagenet tower built on the walls of a Norman nave (shown in a view in the *Builder* some time ago), is accredited only with a tower attached to the church for the residence of the curate and the protection of the villagers from the inroads of the Scots. The rare beacon-turret at the south-east angle of Alnwick Church is slightly alluded to as an Italian turret (whatever that may mean); and the other numerous instances of fortified church towers are not specially pointed out. They are, however, the special features of border architecture. They stand like sentinels guarding the borderland, and form, with the flat towers and mighty castles, a defence of the first importance. One example, at Edlingham, has its fastenings on the side approached from the nave of the church, which proves it was, at some time, used as a place of detention as well. The mention of Edlingham is an opportunity to correct the statement that there are "some interesting chimney-pieces, doorways, &c.," in Edlingham Castle. The edifice has been in reality a fine pele tower, with a winding stone stair. The principal chamber was groined with arches springing from corbels in the angles which intersected each other. It is now in ruins, open to the sky. There is but one fireplace, which is now falling to pieces, with a lintel formed of ten stones joggled together with alternate straight and semi-circular joggles, which has been delineated in Parker's Glossary. To pass to another Castle, it may be remarked there is an interesting fact about Bamborough Castle that has not been touched upon. Malory, in the Morte d'Arthur, says Sir Lancelot desired the Bishop of Canterbury to see that he was buried in Joyous Gard, according to a vow he had made, and states, parenthetically, "Some men say Alnwick, some men say Bam-

The Bridge and Chapel, St. Ives Huntingdonshire.

South-west view of Chapel from Bridge.



General View.

View from North side.

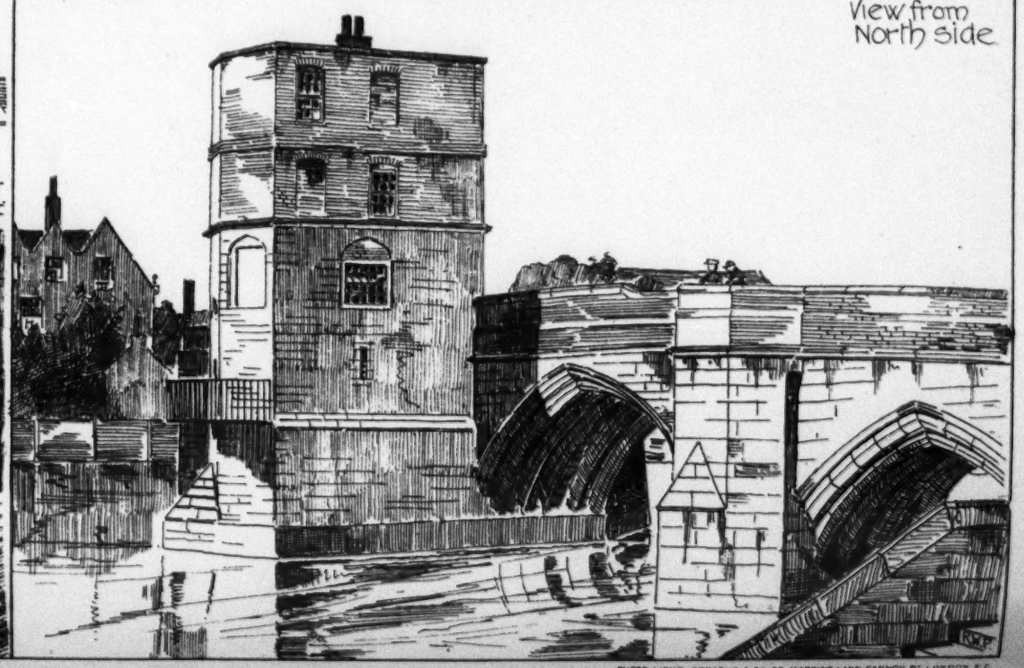
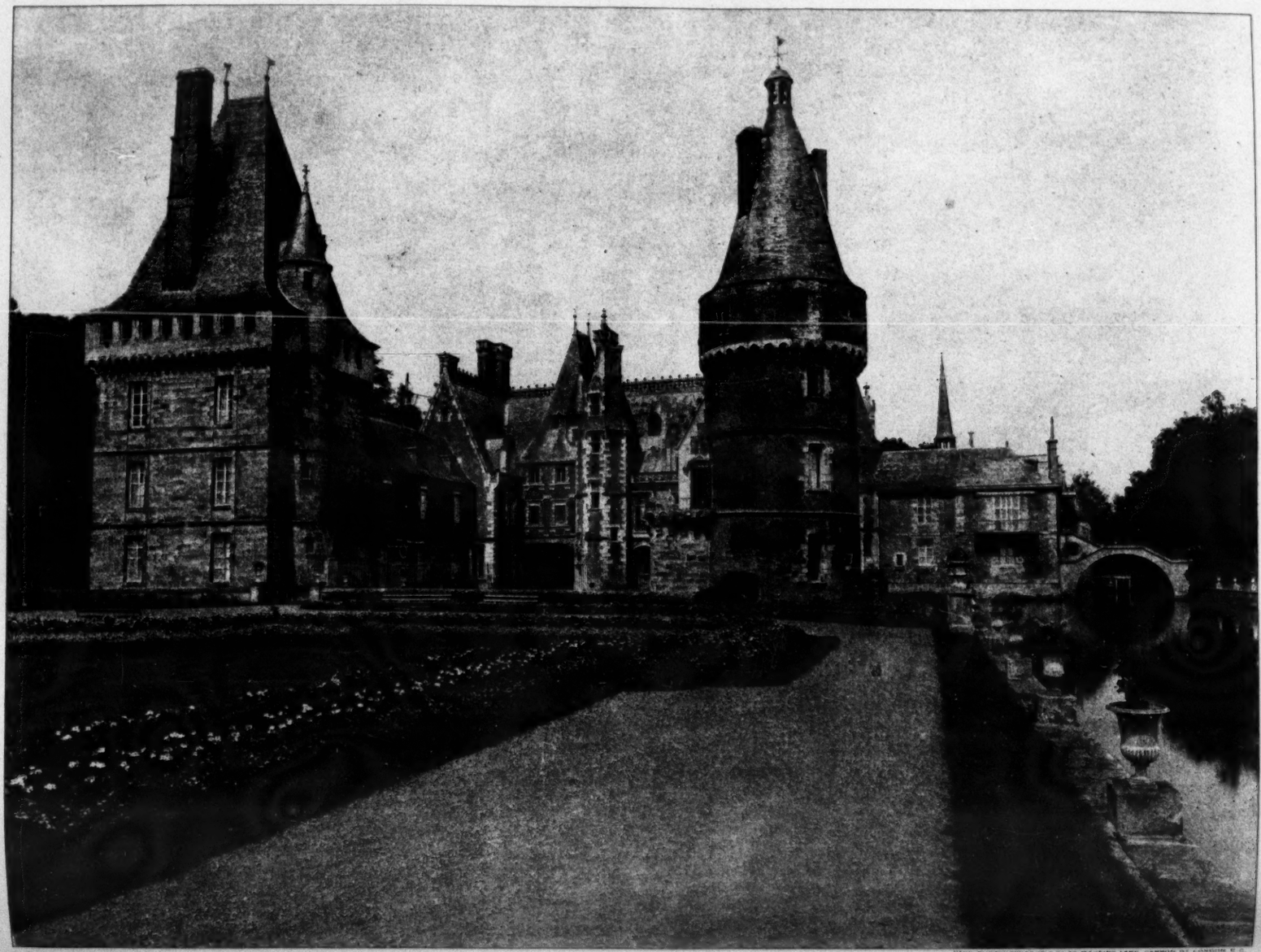


PHOTO-LITHO. SPRAGUE & Co. 62, MARTINS LANE, CANNON ST. LONDON, E.C.



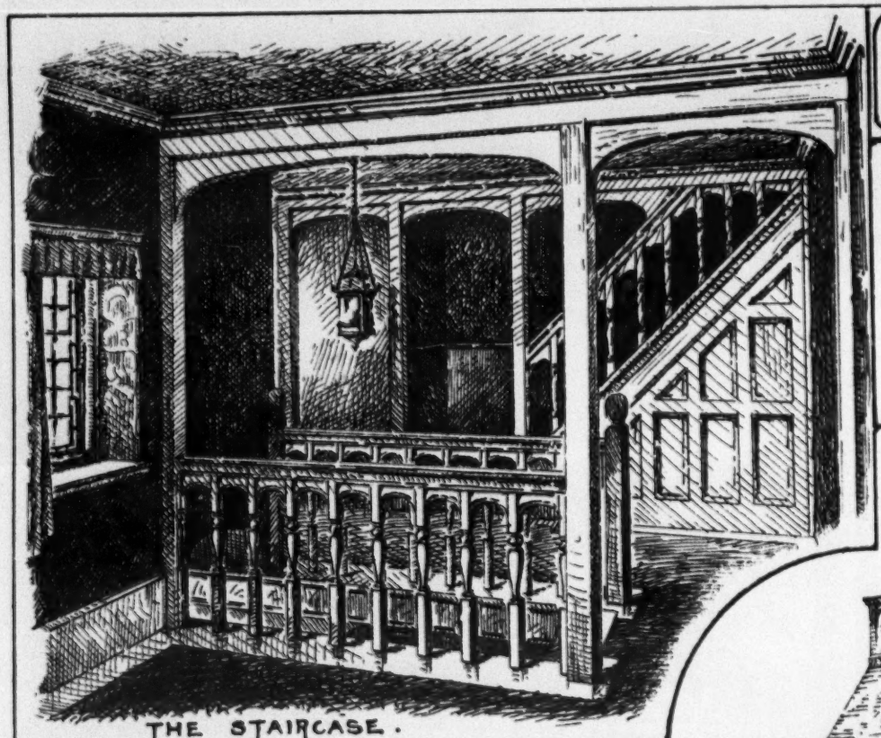
THE CHÂTEAU DE MAINTENON: FROM THE GARDENS.

UNITED METHODIST FREE CHURCH, MANOR PARK, ESSEX.—Messrs. Potts, Sulman & Hennings, Architects.

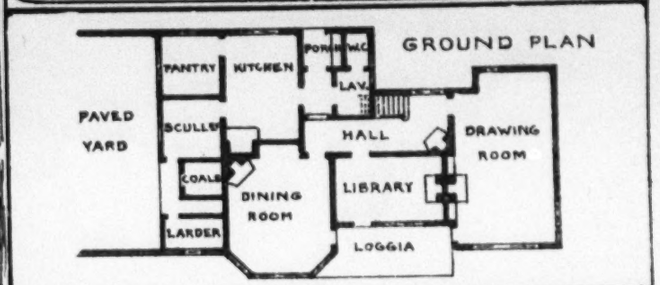
'THE HUT', HATCH END, PINNER.

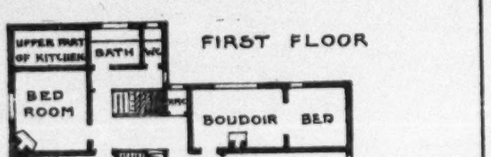
for LADY WATKIN WILLIAMS.

JAMES RANSOME, ARCHITECT.

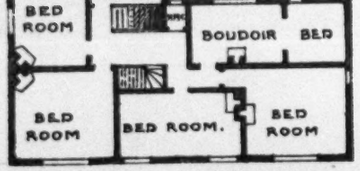


THE STAIRCASE.



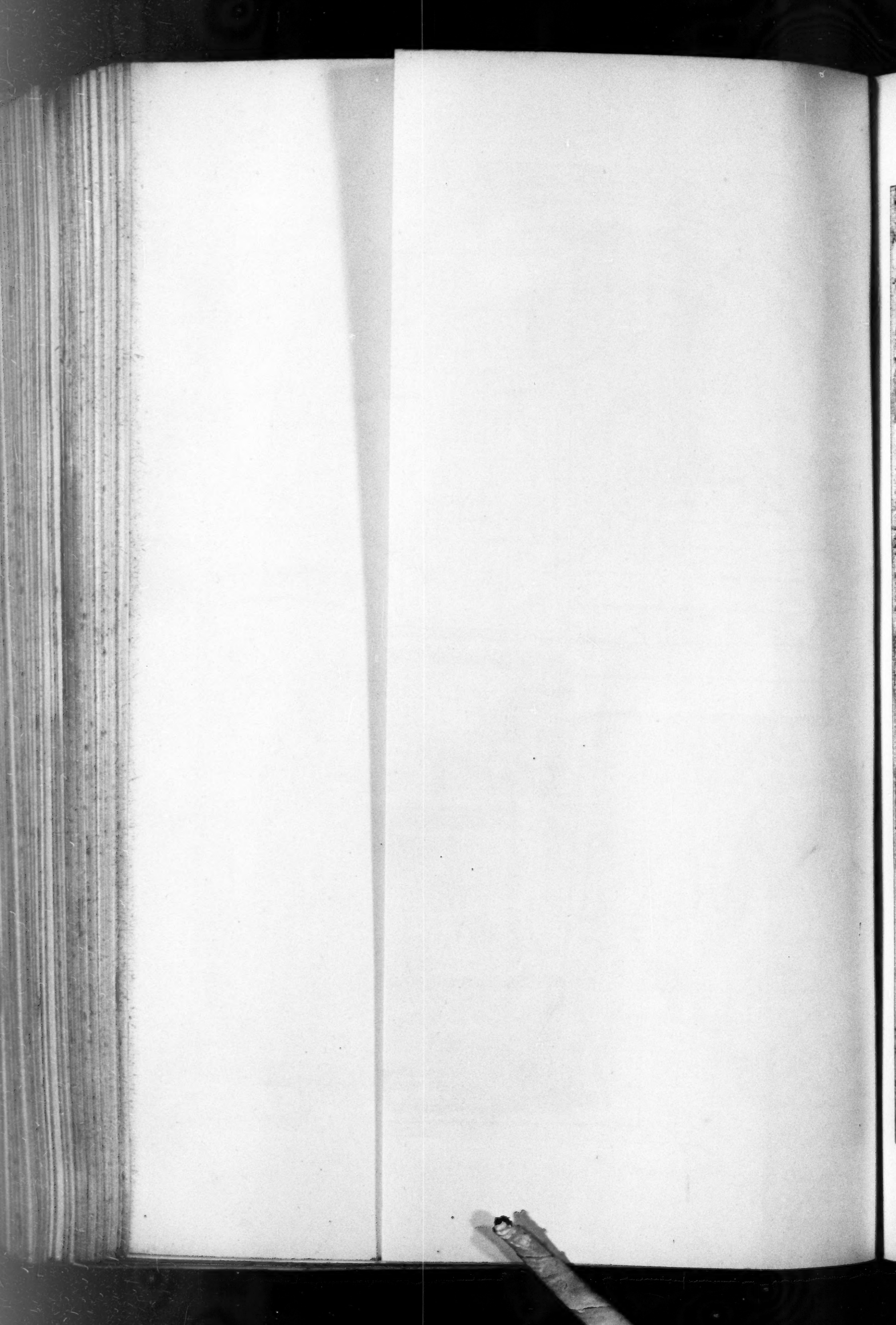


SOUTH FRONT.

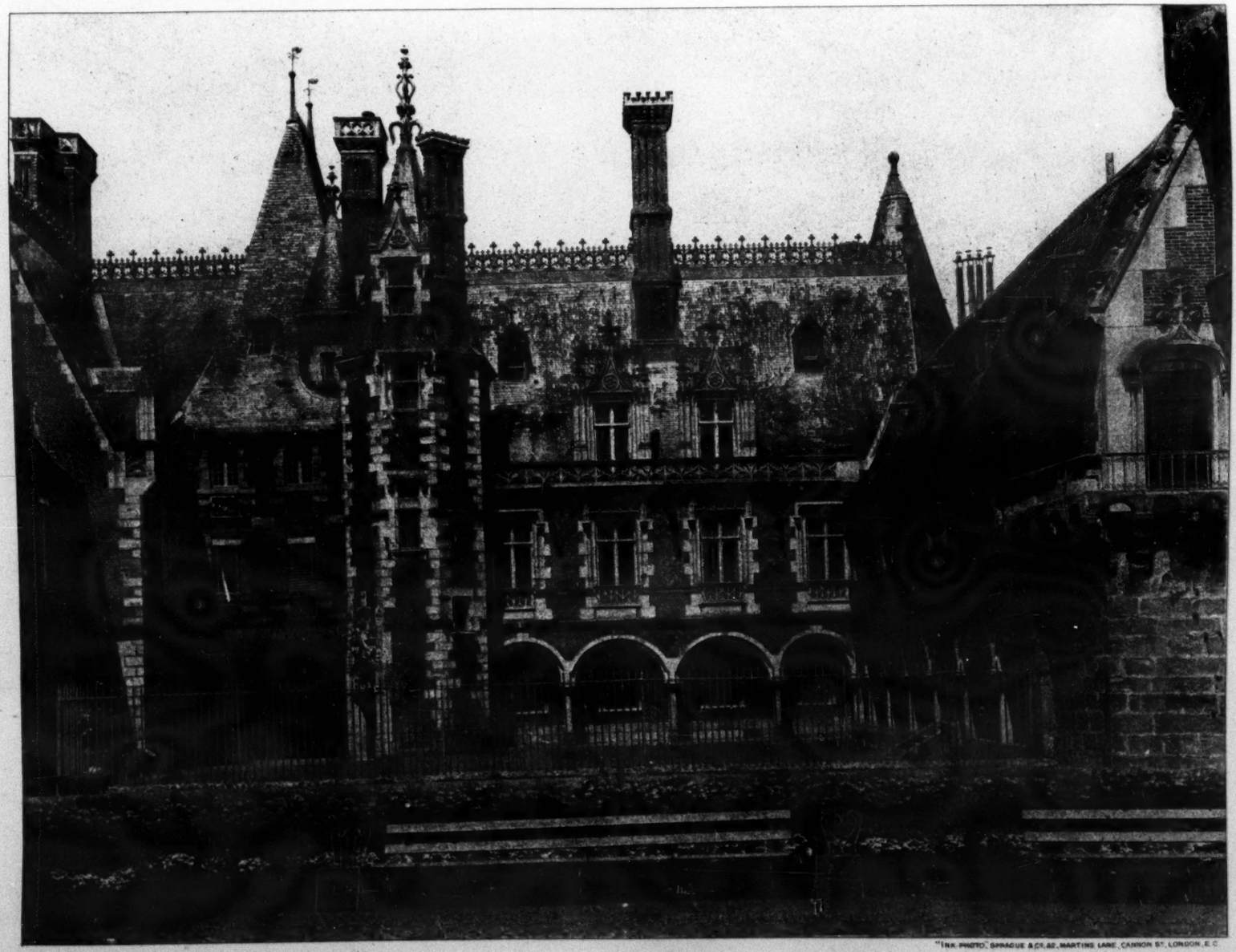


THE DRAWING ROOM.

PHOTO-LITHO SPRAGUE & Co. 22 MARTINS LANE CANNON ST. LONDON E.C.



PART OF NORMAN ARCADE, ST. BARTHOLOMEW-THE-GREAT, SMITHFIELD—FROM A DRAWING BY MR. W. D. WEST.



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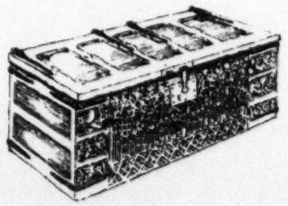
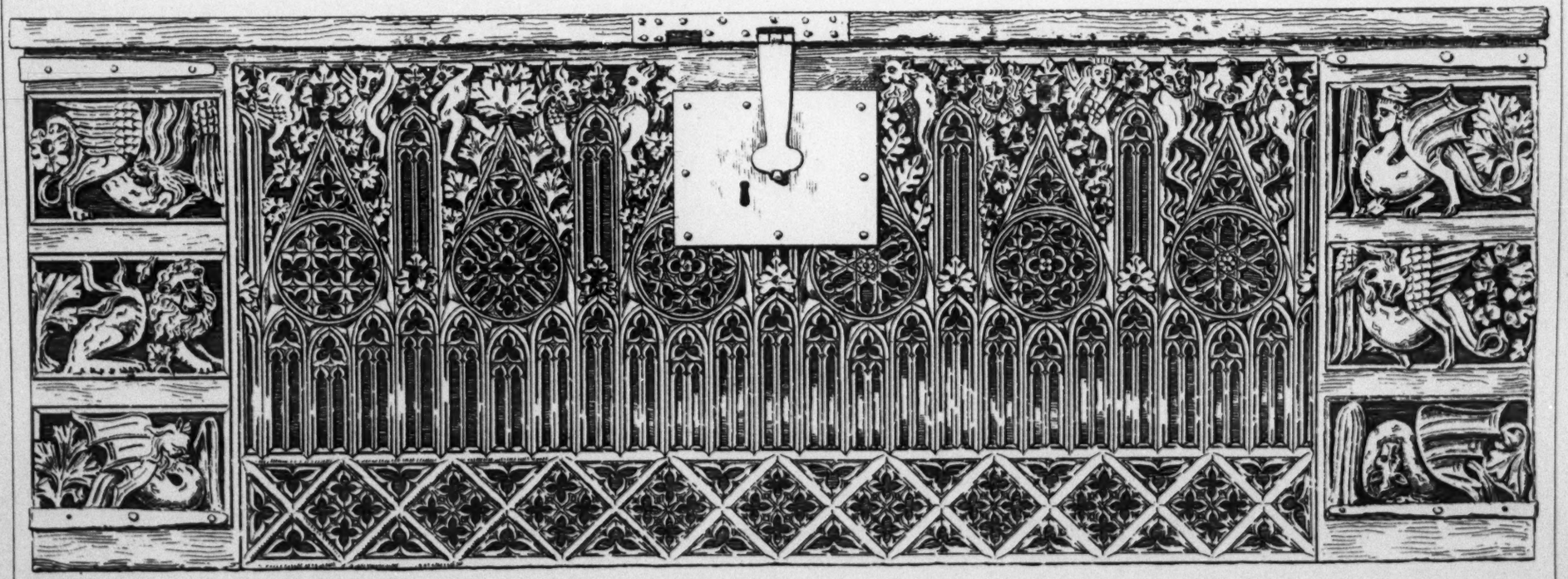
THE CHÂTEAU DE MAINTENON: PRINCIPAL FAÇADE.

OLD OAK CHEST.- BRANCEPETH CH.





SCALE OF 12 9 6 3 0 1 FEET.

W. G. Fostill.
1890.

PHOTO-LITHO. SPRAGUE & CO., 22, MARTIN'S LANE, CANNON ST., LONDON, E.C.

borow." Some colouring is given to this identification of Bamborough Castle with the Garde Joyeuse in the popular name given to the effigy of a cross-legged knight now lying in the church, which is known as Sir Lancelot du Lake. In the reference to the monument to the memory of Grace Darling in Bamborough churchyard, perhaps it is too much to expect that mention should be made of the singular fact that the original figure of the heroine was so worn away by the action of the elements that it has already been replaced by a second one, from the chisel of the same artist who sculptured the first. In the brief account of the church, the crypt is spoken of as "probably the place where the dead of the adjoining monastery were laid before interment," which would lead anyone to suppose the writer is under the impression that the magnificent crypts in larger edifices were also intended for mortuaries. In another place the hand-book states that Embleton vicarage is one of the three original fortified vicarage-houses in Northumberland, the two others being at Whitton and Elsdon, whereas there are others at Shilbotell, Ponteland, and Alnham; and in another place Whalton is mentioned as having one. Reference to the index shows that Shilbotell and Alnham have not been included in the survey. The vicarage-house at Alnham is, next to Elsdon, the best specimen of these curiosities of border architecture; and the examples at Shilbotell and Ponteland are both extremely interesting, the first being incorporated with modern additions, as in that in Embleton vicarage, and the other standing, isolated, in the vicarage-grounds, having been carefully preserved when more modern work once attached to it was taken down a few years ago.

There is a paragraph relating to the names of places in Northumberland that would be still more interesting if the significant fact was added to it that many of the hills bear names that testify to the frequency of beacons upon them. These names are Wisp Law, Flare Cairn, Spy Law, Lampet Law, Watch Law, Leam Beacon, Beacon Plantation, Lantern, Jenny Lantern, Look Out, Hook-up, Light Berks, Flamboro', Lemeden, and Upper Leme. And there is another string of names of equal significance:—Gallow Moor, Hanging Law, Hanging Shaw, Gallows Hill. In one instance, a gallows that had fallen into ruin has been seriously restored, and now maintains the old traditional character of the locality in which it is situated.

The editor has had the advantage of the assistance of several able hands, including Canon Greenwell, Bishop Lightfoot, Sir William Crossman, and many of the local clergy. These have given special value to various parts of the work, as in the account of Durham Cathedral, Bishop Auckland, and Holy Island, and various particular parishes. The fact remains, however, that there are districts in both counties not included in the scheme. The extent of the surface passed over has precluded search for minute archæological details. However, in a broad way, the two counties are faithfully represented, and their leading features described. In Durham the early railways, the collieries, pitmen and keelmen, the lead mines, and glass and iron and steel works are touched upon; the popular customs described; eminent men enumerated; the castles and country-seats briefly described; the standard histories and guide-books catalogued; the inns mentioned; and a skeleton tour "comprising all the chief objects of interest in the county" laid out. In Northumberland, border history, border tenures, ballads, mines, agriculture, sheep and sheep-dogs, language, customs, superstitions, smuggling botany, and natural history are all gone into, as well as the structural works. The editor recognizes the architecture of the last century as "gingerbread." He says the Northumberland churches "are not generally remarkable; most of the ancient buildings are mutilated or modernized; other churches are gingerbread erections of the last century." The renovations in Alnwick Castle, in the last century, he describes as "gingerbread," and those made at the same period in Ford Castle are also styled "gingerbread Gothic;" and the chancel of Alnwick Church is also "gingerbread Gothic." Nevertheless, the accounts of the leading lions of the North are fairly correct. Alnwick Castle, for instance, is faithfully described. In the church, however, ancient features recently restored, such as a row of clearstory windows on plastered up out of sight, have been missed. Tapestry is mentioned and described as being at Hulne Abbey, which has, in fact, been removed to Warkworth Castle these twenty years or more. In the account of Warkworth Castle, the editor falls into the mistake of confusing the decisions and work of the fourth Duke of Northumberland with those of the first Duke, which rather mixes things up. He says, in connexion with this subject, it was a question with the first Duke whether Alnwick or Warkworth were most fitted for the ducal residence, Alnwick being then almost as untenantable as Warkworth, which is quite correct; but he adds: "When he decided in favour of Alnwick, he still caused the partial restoration of this keep, and several rooms have been fitted up with oak carvings and tapestry." This is incorrect, for it was Algernon, the fourth Duke, the grandson of the first Duke, who, a century after the decision arrived at, arrested the decay going on at Warkworth, and fitted up the rooms in question in which the tapestry mentioned is now hung. In another place, this same Duke, Algernon, is spoken of as the fifth Duke. The great gateway, known as Bondgate tower, in Alnwick, is erroneously ascribed to the father of Hotspur. Hotspur was slain in 1403, and his father in 1409, and no parts of the walls or towers of the town were erected before 1433. The best authorities assign the erection to the son of Hotspur, to whom Henry VI. granted a licence to "wall around the whole of the aforesaid town, and embattle and machicolate the walls of the said town, and also make and order any other defences whatsoever around or upon these walls free from any hindrance whatsoever;" though a document still preserved by the Corporation shows that fifteen years after this date the work was not finished, and that a petition for help towards its accomplishment was issued by the King's "trew liegemen." In the mention of Alnmouth "Dixon's History" should be Dickson's. And one more line might have been given to the neighbouring Lesbury Vicarage, to tell that Miss Jane Porter used to visit there. Lesbury Church, too, is another of the edifices that might have had mention. In the matter of ownership, it is of course difficult to keep a work of the kind up to date. The Chesters, for instance, needs attention in this respect.

As before indicated, these trivial shortcomings are but small specks upon a work that is generally executed in a masterly manner. The wild nature of some parts of the country is skilfully outlined; the free lives of the Northumbrian clans; the civil wars in the moss-trooping times; the cattle-stealing, raids, and general hard conditions of old border life are brought out; and the general toning down noted from the days when the farmers gambled away their farm-stock to the present time when the handbook allows that "among all English counties the palm of courtesy and hospitality is carried off by Northumberland." In some parts, in Elizabethan times, the cattle were driven into the villages, and there watched all night; in others, wolves and robbers were equally to be guarded against. Hodgson tells us a watch used to be set at all passages and fords along the middle marches towards North Tynedale and Redesdale, that hue and cry might be raised directly thieves approached. The dalesmen were divided into clans, and the head of each resided in his own pele-tower, and exercised a right of pasturage over the vast moors around them. The editor adds:—"A few of these families still exist as lairds on their ancient estates; more still as tenant-farmers on their former properties. They lost their estates through getting into debt by gambling, drinking, and betting on horses and cocks; but the old names, and much of the old pride, haughtiness, and exclusiveness remain." And, indeed, it is not at all uncommon to find farms in various other parts of the country in the occupation of families who have held them for nearly three centuries. The merchants of Newcastle, in Elizabeth's time, made a law that they would admit no apprentices from the districts inhabited by these clans, which was not repealed until 1771. The editor has picked up many of the old sayings and the old ghost stories, and some of the peculiar idioms of the country. He has not noticed, however, the frequent use of the word "shall" instead of "will" in common speech. Fragments of the old ballads, too, lie like flowers on the pages. Condensation has been the aim, yet old authors are quoted and old histories given at sufficient length. Defoe, for instance, wrote of Darlington that it "had nothing remarkable in it but dirt and a bridge over little or no water," which serves as introduction to the improvements that have been effected since his day, and leads up to a good account of St. Cuthbert's Church, where visitors are bid to notice the "squince" in the south side, which is evidently a "squint," and the Easter Sepulchre on the north side of the chancel. "The spire," says the editor, "is called Darlington Broach, from the fact of its being simply placed upon the tower without a guard." King James's remark that the town should be called "Darneton in the dirt" is also given, as also a slight outline of the romance of the place, by which a daughter of the post-master became the ancestress of some of the great people of the land. There is mention, also, that the inn is described in "Rob Roy." Open the bright red volume where we may, in truth, there is pleasant information in its narrow columns, compactly compressed.

London of the Past: a Picture of the Olden City. By J. Ashton Ainscough. London: Elliot Stock. 1890.

It has been said that there is much need of little books upon great subjects. We think this small volume will be found to answer the first condition, as it undoubtedly satisfies the second. Within the compass of sixty-three pages Mr. Ainscough presents us, not with a text-book, but with a collection of noteworthy facts, intended, as he says, "to draw the outlines of a suggestive picture, by grouping together piquant details of the Great City's past, and by calling attention to the striking changes it has undergone." He takes an extensive variety of topics, more than fifty in number, but dismisses each of them in a few well-considered paragraphs that serve as *indicia* to any one who would pursue its subject further. He makes many quotations from Stow's survey, and from Fitzstephen's much earlier record, but does not give references to several other citations which we should like to have seen supplied.

Turning to matters in which we are more particularly concerned, we notice that he directs attention, under the somewhat large heading of "Architecture of Old London," to Crosby Hall, the hair-dresser's shop in Fleet-street, opposite to Chancery-lane, and Staple-inn. The last-named, he might have added, has been lately rehabilitated for the Prudential Assurance Company by Mr. Alfred Waterhouse. Of the older houses, he says: "The material of which the houses were constructed was chiefly wood, chestnut being the variety most in use." Yet we think that chestnut, albeit sometimes employed for screens, open roofs, and similar ornamental work, where money was to hand, was not used for ordinary purposes to the extent that the writer seems to indicate.

In these more enlightened days, we cannot easily figure to ourselves the depreciatory manner in which strangers and foreigners were regarded by our fellow-citizens. In the two pages in which he speaks upon their disabilities in London, Mr. Ainscough touches upon a topic which has not been commonly explored, and should form an important chapter in the domestic history of the town. "Strangers and other mean people" are held up to obloquy: by "strangers" we should understand intruders from without the City limits; and there are many contemporary evidences of the restrictions that were placed upon their traffic with the citizens, especially in the case of immigrants from beyond sea and dealers in foreign wares. The persecution of the Jews was greatly due to causes other than their alien origin. The author devotes a few words to the City walls, of an important piece of which, in Ludgate Hill, we gave an account three months ago.* The concluding eighteen pages are devoted to the rural surroundings of London, its gardens and orchards, the environs, and Vauxhall and Ranelagh. In noticing Marylebone, whilst giving its correct derivation to the name of the parish, Mr. Ainscough does not quite correctly say that the Tyburn rose near Primrose Hill and flowed through what is now called Tyburnia. It did flow through the parish, but towards the gallows at what is now the southern end of Marylebone-lane; the gallows, on removal further westwards, appear to have taken the name of Tyburn along with them. Though we cannot say that this book casts much new light upon an old, yet inexhaustible, subject, it is refreshing to meet with a writer

* See "Note" in the *Builder*, August 3

who, whilst cognisant of their multitude, sparingly uses the vast materials at his command, and so using them does not weary us or lead us astray.

Holy Trinity Church, Hull; a guide and description. By J. R. BOYLE, F.S.A. London: Simpkin, Marshall, & Co. Hull: A. Brown & Sons. 1890.

THIS is a good attempt to put together all the historical facts of interest as to a church which is not in itself very interesting, but is the chief ancient architectural monument which Hull possesses. The illustrations of the interior would have been better omitted: they are rather too much of the "guide-book" type.

Two Beverley Churches: The Minster. By W. STEPHENSON, M.R.C.S., and *St. Mary's Church*, by JOHN BILSON, A.R.I.B.A. Hull: A. Brown & Sons. 1890.

THIS is a pamphlet containing papers read by the respective authors on the occasion of the visit of the British Association to Beverley on September 11 of this year. The first is mainly archæological and historical, the latter, as might be expected, more architectural in character. There are no illustrations, but the writers understand their subject, and the pamphlet will be a useful companion for any one about to visit Beverley.

Correspondence.

To the Editor of THE BUILDER.

TEMPLE OF NIKÉ APTEROS.

SIR,—In "A Letter from Athens," Professor Aitchison, referring to this Temple of Niké Apteros, writes:—"As we owe the re-erection of this temple to the munificence of Dr. Schliemann——"

There must be some misapprehension here. It is generally understood that this little temple was demolished by the Turks, in order to establish a battery, during the siege of 1687, the fragments forming part of the foundation of such battery.

When the remains of this work were cleared away in 1835, the architects,—Schaubert and Hansen, who, with Professor Ross, had charge of the excavations,—found the fragments of the temple comparatively uninjured, and, with great patience and skill, they reinstated the whole as it now stands, almost perfect, on its original terrace.

Great as is the honour due to Dr. Schliemann for his munificence in other matters, he would certainly not desire to appropriate the credit for the work done, and so well done, by Messrs. Schaubert and Hansen, some fifty-five years ago.

When recently in Athens, I noticed with regret how much the fallen column (not columns) of the Temple of Jupiter Olympius had continued to suffer by the injuries inflicted by thoughtless persons since its fall in 1852.

ARTHUR CATES.

BRIDGE CHAPELS.

SIR,—I venture to supplement the list of these given in your illustrated article of last week with the names of Doncaster, Ludlow, across the Teme (St. Katharine's), Bideford, Richmond (Yorks), Leeds, Bristol, Bedford (St. Thomas's Chapel, Bunyan's gaol), Catterick (St. Ann's), and Droitwich (road through chapel). Leland, who returned from his tour in 1542, cites a bridge across the Thames at Causham, perhaps Caversham, and that of Archbishop St. William across the Ouse at York. He also says:—"I enterid Rotherham by a faire stone Bridge of four arches, and on hit is a Chapel of stone, well wrought." The Wakefield bridge across the Calder is, *teste* Hall, the scene of the young Earl of Rutland's murder by Lord Clifford, in December, 1460. Norrison Scatcherd wrote two treatises—1828 and 1843, London, 8vo—upon this and similar wayside chapels. He ascribes its date to before 1357, rather than to 1460-1. He uses the somewhat polemical style not infrequent with essay writers of an old school, yet what he says is worthy of attention. He compares St. Mary's Chapel with Prior Crawden's chapel at Ely, 1321-40, and is "almost persuaded" they were built by the same architect, Alan de Walsingham. It has been illustrated by Toms, after George Fleming, 1743; Lodge, in Thoresby's Ducatus; and Cawthorne, *circa* 1800. Together with the "Little Lady Chapel" over the Don, at Rotherham, and of which mention is made in 1483, it forms the subject of the architects, Messrs. J. C. & C. Buckler's, book in 8vo, printed at Oxford, 1843. Those authors are of opinion that the St. Mary's Chapel, Wakefield, was early fourteenth century work. In Hone's "Table Book," I., 413-6, is an account, with wood-cut, of the Elvet bridge, Durham, originally built by Bishop Pudsey, about 1170, where formerly stood the chapels of St. Andrew and St. James, and, according to some, another which gave name to the Magdalen steps there.

W. E. D-M.

PRESERVATION OF THE MONUMENTS OF ANCIENT EGYPT.

SIR,—In one of your "Notes" in this week's issue, you lament the small number of signatures to the memorial to Lord Salisbury, as evidencing the lack of interest in the subject on the part of those present at the last meeting of the Institute. Permit me, as one of the implicated individuals, to explain that I had not the remotest idea that there was any petition to sign. The invitation to do so *may* have been on the printed "agenda," but I cannot now say, as mine is destroyed. The President referred to the matter at the *commencement* of the meeting, but I failed to catch his concluding remarks. I scarcely think the matter was sufficiently notified to the meeting, else I feel sure the members would have very cordially supported the Council in their laudable efforts, especially if the sphinx is in the jeopardy alluded to in the letter in the *Times* of this date.

November 25, 1890. F.R.I.B.A.

"CEMENT TESTS."

SIR,—I have read with much interest the letters in your paper, *re* Cement Tests, in reply to my communication in your paper of October 25 last. The view I had in mind when writing the same was not so much to start a discussion upon sundry characteristics of a good Portland cement, or the relative value of some tests, but rather to show what had been done in Prussia in the matter of bringing into uniform shape various opinions and specifications. The rules I have quoted were given by the Prussian Minister of Public Works for his department only, which is a very large one, but the convenience of having short, precise, and uniform rules has proved so great that they are now largely used beyond their originally intended sphere of application, and I am informed that they are enforced in many private works, in works undertaken by Municipal Corporations, &c.

In order to show that there is really not much difference between these rules and those adopted by the first Municipal Authority in this kingdom, I quote the following from a specification of the late Metropolitan Board of Works, issued shortly before its dissolution:—

"The whole of the cement for these works, and herein referred to, is to be Portland cement of the best quality, ground so fine that the residue in a sieve of 5,800 meshes to the square inch (equal to about 76 per lineal inch) shall not exceed 15 per cent. by weight. When tested, should the proportion which will not pass through the sieve be greater, a quantity of neat cement equal to such excess shall be added (at the contractor's expense) to the specified proportions of all cement, mortar, or concrete, used upon the works. When brought upon the works, it is immediately to be put into a dry shed or store which the contractor shall provide for the purpose, having a wooden floor and all approved necessary sub-divisions. The cement is to be emptied out upon the floor, every ten tons being kept separate, and is not to be used until it has been tested by samples taken from different sacks. The cement is to be gauged with three times its weight of dry sand, which has been passed through a sieve of 400, and been retained upon one of 900 meshes to the square inch. The cement and sand having been well mixed dry, about 10 per cent. of their weight of water is to be added, and briquettes formed in moulds of 1 in. sectional area at the weakest point. The briquettes, having in the meantime been kept in a damp atmosphere, are to be put into water twenty-four hours after they have been made, and remain in water until their tensile strength is tested by means of apparatus belonging to the Board, and by their officers. These briquettes must bear, without breaking, a weight of 230 lbs. per square inch, twenty-eight days after the briquettes have been made; and the cement, neat, must not at any season of the year set in less than one hour. Any cement which does not answer the requirements will be rejected, and must be forthwith removed from the works. Briquettes of neat cement shall also be made and broken after seven days, as may be directed by the Engineer. Their limit of resistance and the weight of the cement shall also give results to his approval. The cement store to be provided with a Chubb's patent lock and key, to be obtained and fixed by the Board."

I have no doubt that this specification is based on the excellent experiments made by the late Mr. Grant, one of the Assistant Engineers of the Metropolitan Board of Works, who was a pioneer in this question, and to whom we owe very much in all matters relating to cement. It is difficult to say with certainty to whom belongs the credit of having first laid down these rules; but this I know, that much in relation to Portland cement has come, with the name, from this country to Germany.

The value of uniform standard rules is recognised on the Continent beyond the limits of the Prussian kingdom, and a permanent Commission is at work to establish further rules for universal acceptance, based on the latest and most extended experiments. This commission meets periodically, and, at its last meeting, in Berlin, on September 19 and 20 last, there were present or represented, besides the heads of all the larger German engineering laboratories, the heads of public and private engineering laboratories in Austria, Switzerland, Russia, Sweden, France, and Holland, and also representatives of the cement industry, notably Dr. Delbrück, of Stettin, president of the Association of German Portland Cement Manufacturers.

I fully agree with what Professor Beare has said in his letter in reference to the desirability of some standard rules for this country. There is certainly no need for Government interference in this matter. In these days, when "time is money," surely it must be a great advantage to all concerned to be able to work to standard rules that have been adopted in this country by representatives of the profession and cement industry alike. Engineers and architects will then be saved the trouble they are now put to of finding out for themselves, out of a mass of confusing information, what appears to them a good specification, and manufacturers will not be subjected then to one sort of test here and another one there.

I conclude with quoting an instance that has recently come to my knowledge which I think will demonstrate the want of standard rules.

An engineer in charge of works decided to test cement supplied to him by a manufacturer. To do so he used wooden moulds, in which he made his briquettes. When examined before testing, the briquettes presented a very rough appearance on the sides, as the cement had crumbled away, the wooden moulds having sucked up the moisture. The result was the cement was condemned, which, of course, was a hardship to the manufacturer, the moulds being at fault, not the cement.

H. ALFRED ROECHLING, Assoc. M. Inst. C.E.

DEATH IN THE VENTILATOR.

SIR,—It would have been more creditable to Mr. Simmana for him to have cordially admitted his mistake, than to lay the blame upon the unconscious ventilator, as he does on p. 409. He advocated the use of a particular style of ventilator, which was unsuitable and dangerous *for that particular purpose*, and, when corrected, he is now puzzled to know why a cowl on the top of a soil-pipe requires to let air in as well as to let it out. I gave the reason on page 372.

He further tries to cover up his mistake by the red-herring process in asking, "Why use an extraction-cowl at all, if it is to let air in as well as to let it out?"

Now, the letting-in part of the work is only momentary,—when a closet, &c., is being discharged,—and a proper cowl is useful in many cases for preventing continuous blow-down, which, without it, would often happen with the plain, open pipe in many situations. Further, in cases where there is a self-acting fresh-air inlet-valve at foot of soil-pipe, &c., it often happens that, although the plain open pipe cannot open this valve, the putting on of a good exhaust ventilator opens it, and thus the end desired by the architect or plumber is attained.

The letter from Mr. Simmana on page 409 is clever enough, but at the same time it is only quibbling.

W. P. BUCHAN.

P.S.—As this matter of selling valve ventilators to plumbers or other people for use upon soil-pipes seriously affects the health of the community, Mr. Simmana should get his firm to recall the circulars sent out recommending such, and issue new circulars cautioning against the use of these upon soil-pipes, or they may find themselves sued for heavy damages should evil ensue from their use.

W. P. BUCHAN.

Glasgow, November 22, 1890.

HARRINGAY SCHOOLS.

SIR,—With reference to the design you published last week for the Harringay schools, and which is described as "Second Premiated Design," I think it right to let you know that my design for the said schools was adjudged of equal merit with that of Messrs. Mitchell & Butler, and we divided the second prize of £52. 10s. equally between us.

HOWARD CHATFIELD CLARKE.

OBITUARY.

MR. LAWRENCE MARR.—The death is announced of Mr. Lawrence Marr, contractor and team-owner, of Lodge-lane, Liverpool. According to the *Liverpool Daily Post*, among the many contracts which the deceased carried out were the excavation works in connexion with Lime-street Tunnel and Exchange Station, not to mention road-making on a large scale under the Corporation and various suburban boards.

The Student's Column.

HOT-WATER SUPPLY FOR BATHS, LAVATORIES, &c.—XXII.

FAULTS AND SOURCES OF DANGER.

To enumerate all the faults that may meet even a single individual's experience would occupy a great deal of space, but there are some of a very common character that it may be profitable to enumerate and describe. One is the connexion of a draw-off service (or services) to the return-pipe instead of the flow. This, although of frequent occurrence, can only be the work of an utterly ignorant or careless man, or one who has been accustomed to heating work in which the return-pipe has all, or nearly all, the services connected to it. This fault is usually recognised by one tap yielding water of a very different temperature to the others, but if all taps should be from the return-pipe a difficulty may be experienced in judging whether the boiler or other part of the apparatus is at fault, unless the pipes are all exposed so that the error in connexion is obvious.

Another, and only too frequent, cause of failure is a boiler of insufficient power. This can usually be detected in a measure by the fact that hot water is only obtained some hours after the fire is lighted, or only some time after the early demand has temporarily ceased—say, between breakfast and luncheon hour. There are great numbers of ranges condemned on this account, as but few range-makers even now seem to comprehend that an efficient supply of hot water is as essential as efficient cooking facilities, and the most miserable boilers are often provided with what otherwise may be first-class ranges. The only remedy is to introduce a good boot boiler, or an independent boiler if needed.

Sometimes the work of a boiler is rendered next to futile by reason of the pipes being exposed to such an extent as to cause a serious loss of heat by radiation. This happens when the pipes are carried along cold galleries or stone corridors, or if they are carried in vertical casings which are not packed or filled with some poor conductor of heat (as has been already explained), or what, perhaps, is the most frequent cause of this trouble, the tank being situated and exposed in a roof where it is robbed of its heat as fast as it is possible to do so.

Another frequent cause of trouble is omitting to terminate the return-pipe in the boiler at a lower point than the flow, although every care is exercised to terminate the flow at a higher point than the return in the tank. This arrangement is adopted by many, who profess that it gives equally good results as making the return lower than the flow in the boiler; and, certainly, if the apparatus is once started right and kept going without cessation, no trouble would afterwards arise, but when starting with cold water in every part of the apparatus there is no knowing which pipe will act as the flow and which as the return, for as both openings are at a level, and as there is no influence brought into action to cause the first particles of heated water to travel up one pipe in preference to the other, there will be no knowing which pipe will act as the flow or which as the return; and, further than this, the pipe that acts the part of a flow one day will, possibly, be the return on the next, and would give rise to a complaint that although hot water could be had one day, the supply was bad another day; and there is every likelihood of the servants being blamed for this, as it would be attributed to non-attention to the fire or non-cleaning of the flues.

The mere fact of one pipe standing higher than the other in the tank makes no difference whatever when starting an apparatus charged with cold water. The chief use and object of the flow-pipe reaching a high position in the tank is to enable us to draw off the hot water without having the inflowing cold water mixed with it.

Sometimes a fitter is unfortunate enough to lose his bearings, so to speak, and ends up his work by crossing his pipes,—that is, connecting the flow-pipe from the boiler into the tank as a return, and the return-pipe from the boiler into the tank as a flow; this can only happen in a large and complicated apparatus; and although the water will circulate very well there is the disadvantage of having the flow-pipe proceeding from the *bottom* of the tank, where the cold supply enters; and when a tap is opened we do not get the hottest water by many degrees, for the water will flow as indicated by the arrows at Fig. 60. This is usually easy of remedy by transferring the stand-pipe in the tank from one pipe to another. This could only happen with the tank system, and it will be noticed that some of the faults under discussion are distinctly peculiar to this system, while others apply to the cylinder principle.

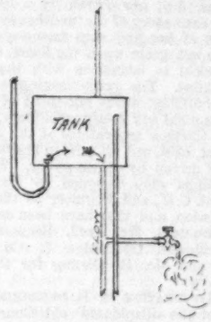


FIG. 60.

It frequently happens that, for the sake of economy, the cold supply to a cylinder is branched from an existing house service, instead of bringing down a distinct cold supply service for the purpose. This is frequently a saving of expense, but it has two drawbacks, one of them of a rather objectionable nature. The first is that, supposing we open a cold tap and a hot tap at one and the same time, as we often do at a bath or lavatory, both taps will run at an annoyingly low speed (unless a high pressure exists) as both services are fed by one supply-pipe from the cistern; whereas with an apparatus that has a distinct cold supply, as it should have, the water will issue from both taps at an equal force, as in this case each outlet has its own distinct supply from the house cistern. This objection would not be felt, of course, if the cold and hot taps were never opened together, or if the one cold house service was of unusually large size.

The other and more objectionable feature with the one service pipe supplying the cylinder as well as the cold taps is, that if any of these latter are near the cylinder, warm water will be drawn (unless a stop-back valve is provided).

We have already explained that a very long draw-off service may be looked upon as a fault by reason of the waste of water it entails, but an instance once came to notice in which this practice caused sufficient trouble to amount to a complete failure. In this case an apparatus existed upon the tank system, with the reservoir at the top of the building as usual, and an attempt to gain the safety of the cylinder system was made by taking away all the draw-off services from the flow-pipe and substituting a single draw-off service taken from the top of the tank and carried down the house to the different places where hot water was required, as fig. 61, so that this single service was about 120 ft. long in all, the house being a high one, and the waste it occasioned neutralised the efforts of the boiler.

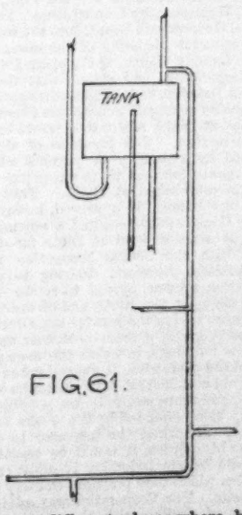


FIG. 61.

On new buildings a method is largely practised of running pipes on the walls before they are plastered, the plaster afterwards being laid over them. This has certainly two good features, one being that the pipes present no unsightly appearance, and the plaster and brickwork prevent to a great extent loss of heat by radiation; but immediately the pipes require exposing for any purpose whatever a great expense becomes necessary, as it must impair the decorations, which may be costly. While the apparatus is working satisfactorily, it matters not whether the pipes are in view or hidden, but there are so many purposes for which the pipes require inspecting that trouble of a more or less serious character must arise at some time with pipes that lie beneath or in the plaster.

Closely allied to this is the trouble occasioned by omitting to put "connectors" (union pieces) into the service-pipes at convenient points, so that when a pipe requires disconnecting at any particular place it may be necessary to take the pipes down for some distance, or else cut the pipe. This is a frequent source of trouble, and it often retaliates on the workman himself, as should he leave a leak to pick up (*i.e.*, rust up), and the leakage refuses to remedy itself in this manner, then the workman has to return to disconnect and reconnect his pipes. This unworkmanlike practice of leaving leaks to remedy themselves is only too prevalent, for workmen are apt to leave leaks of too serious a nature with the hopes of their stopping of their own accord, and this induces a client to think that bad workmanship may have been introduced into the whole undertaking. A leak that only permits of one drop of water falling, say every ten minutes, will remedy itself (in plain iron pipe) very soon by the mere oxidation of the metal, and the joint will be as good after this has taken place as any perfectly-made one; but it is much better to remedy all leaks in a workmanlike way, as otherwise it is apt to lead to carelessness in this particular direction.

GENERAL BUILDING NEWS.

New Wesleyan Chapel, Leeds.—On the 11th inst. the opening ceremony of "Eldon" Wesleyan Chapel, which has been erected in Woodhouse-lane, Leeds, was performed by Mrs. W. T. Miers. The chapel is 70 ft. long, and 51 ft. wide. It is in the Decorated Gothic style of architecture, and has been carried out from the designs and under the superintendence of Mr. George F. Danby, architect, of Leeds. It is built of stone, lined with brickwork, and the internal woodwork is of pitch pine. In the centre of the front elevation the main entrance consists of a double doorway, with granite columns, carved capitals, and moulded arches, terminating in a gable. Over this doorway a four-light traceried window is placed, with two-light windows on either side to correspond. A staircase is arranged at the south-east corner for access to an end gallery. A second staircase to the gallery is also provided at the opposite corner, both being of stone. The ground-floor is entered from the centred doorway, passing through lobbies into a large inner vestibule, 30 ft. by 8 ft. The seats will provide sitting accommodation for 520 on the ground-floor, and 230 in the gallery. The chancel is separated from the chapel by a moulded arch supported on granite columns and carved stone bases and caps, with a traceried circular window filled in with stained glass beyond. The pulpit is of polished pitch pine. Two and three-light traceried windows, terminating in gables, are arranged on both sides of the chapel, filled in with leaded lights. The roof is open-timbered, and is covered with green Westmoreland slates. The heating is by the low pressure hot-water system. The contractors for the stone and brickwork are Mr. Chas. Myers; carpenter's and joiner's work, Messrs. Craven & Umpleby; slating, Messrs. John Atkinson & Son; ironfounder's work, Messrs. J. & H. Smith; and warming apparatus, Messrs. Holmes & Co.

New Church at Halifax.—On the 13th inst. a new church, dedicated in the name of St. Jude, was consecrated at Halifax by the Bishop of Wakefield. The church stands at the north-east corner of Savile Park. The plan comprises a nave with aisles and tower at the south-east corner, chancel with clergy and choir vestries on the north side, and organ transept on the south. The tower is 95 ft. high. The style is that of the fifteenth century. The font is of Caen stone and the pulpit of oak. There is accommodation for about 500 worshippers. The total cost is about 8,400*l*. Mr. W. Swindon Barber, of Halifax, is the architect, and the contractors are Messrs. J. Charnock & Sons, Messrs. T. Bancroft & Son, Mr. John Naylor, and Messrs. Jonas Binns & Sons.

A New Public School at Leith.—On Saturday, the 22nd inst., a new school, to be called Couper-street Public School, was formally opened at Leith by Lord Young. The school, which is built of red and white sandstone, will accommodate about 1,880 pupils, and the cost will be about 14,000*l.*, exclusive of the price of the site. The main building measures about 127 ft. by 75½ ft. deep, and consists of three floors. On the ground-floor is a large central hall, 82 ft. long by 22 ft. wide, and on the same floor are nine class-rooms. On the first and second-floors are similar central halls, each having ten class-rooms branching off. A stair, made of iron and steel, leads up from the ground-floor; and the floors of the halls are all fireproof. On the second-floor are situated the cookery, sewing, drawing, and music rooms, and these are all lighted from the roof, which, being flat, is fitted entirely with glass. The architect was Mr. George Craig, and the builder was Mr. William Baxter, Leith.

Manchester Girls' Institute.—The foundation-stones of a new institution, to be known as the Manchester Girls' Institute, were laid on the 15th inst. The site of the new building adjoins the hospital in Mill-street, Ancoats, in the centre of a thickly-populated district. The basement of the building will consist of a gymnasium (with a dressing-room), nine separate baths, and several class-rooms. On the first-floor there will be a restaurant, a library, a room for a clothing-club, a kitchen, and a room in which lessons in cooking are to be given. The next floor consists of an assembly-room and several class-rooms, while above that are the caretaker's apartments. There is to be a laundry behind the building. The cost of the building, which is in red brick and terra cotta, together with the furnishing and the heating and ventilating appliances, is estimated at 7,800*l.* The architects are Messrs. Darbyshire & Smith, of Manchester.

New Public School, Glasgow.—The new Public School in West-street, Calton, Glasgow, was formally opened on the 15th inst. by the Lord Advocate. The school is situated at the junction of West-street and M'Kechnie-street. The main building, which is three storeys in height, is 99 ft. long by 83 ft. 6 in. wide. The walls of the principal fronts are built of rock-face ashlar, and terminated at the top partly by a parapet and partly by a boldly-moulded cornice. The roofs are pavilion, and covered with Elterwater slate. The buildings are of red freestone from Gatelaw Bridge quarries, Dumfriesshire; the boundary walls are faced with vitrified bricks, and the latrine walls with white enamelled bricks. The playsheds are roofed with concrete, and the playgrounds throughout are paved with granolithic. The style of architecture is Romanesque. Internally the centre of the building is occupied by a rectangular hall, which is enclosed on its two sides by class-rooms, and on the ends by entrance porches and teachers' rooms. The stairs are wide and of easy gradient, the stringers and breasts of steps are of rolled iron, the treads of Arbroath stone, and the plats of granolithic. Hall and staircases are roofed with glass. The accommodation for scholars comprises an infants' school, sixteen class-rooms, a drawing-room, and a kitchen for cookery lessons. The school accommodates in the aggregate 1,512 scholars. The teachers' accommodation comprises six rooms, two on each floor. The whole building is heated on mild hot-water system, the hall and staircases are warmed by six radiators. The work has been executed under the superintendence and from plans prepared by Mr. John Gordon, architect, Glasgow.

Business Premises, Blaydon-on-Tyne.—The Blaydon District Industrial and Provident Society, Limited, has opened part of a new building which, when completed, will be 120 ft. in length. The building already erected forms the grocery and provision department, and has been fitted up with the most modern means for easy working and quick despatch. The architects were Messrs. Thompson & Dunn, Newcastle-on-Tyne. The building is three stories in height, and the design is described as a free and bold treatment of French Renaissance, executed in Gunnerton stone.

New Baths, Salford and Broughton.—The Salford Borough Council at their last meeting accepted the tenders of Messrs. R. Neill & Sons for the general contract, amounting to 7,897*l.*, and Messrs. Bradford's for the engineering and boiler, amounting to 1,069*l.* The designs are by Messrs. Mangnall & Littlewoods, architects, Manchester, and were selected in a competition. The land is a rectangular spot, situate at the corner of Regent-road and Derby-street, and is well adapted for its purpose, being in a populous neighbourhood.—Broughton is also having new baths erected by the same architects. They are situated in Great Clowe-street, and are advancing rapidly towards completion, the Baths Committee being sanguine of having them ready for use next summer.

New Malthouse, Ipswich.—Besides the extensive range of buildings, comprising a six-story warehouse with malthouse adjoining (steeping 200 quarters) recently completed and extending from Albion Wharf to Key-street, Messrs. R. & W. Paul have just erected another new malt-house at Eagle Wharf, adjoining the dock, also a large factory for cleaning and sorting foreign barley before malting it. The malthouse is situated on a portion of the site of the buildings formerly known as the Eagle Foundry, and extends 190 ft. back from the public quay. It consists of a five-storied building, for 150 quarters steep, with two kilns at its eastward end fitted with some of the most modern appliances. The drying-floors are laid with Herrmann's patent wire work, supplied and fixed by Messrs. Lewis Olrick & Co., and the heating apparatus is Tomkins, Courage, & Cracknall's patent, fitted up by Messrs. G. J. Worssam & Co. The first floor of the warehouse is entirely occupied as a malt-store, and has a capacity for 5,500 quarters. An elevator is provided for the barley stores on the west or dock front, also skip lifts from the cistern, and for loading the kilns, all of which, with Boby screens, &c., are driven by a 10-h.p. gas-engine. On each story of the malthouse there are several lines of hanging skip tramways for distributing the wet grain upon the floors, and these are also worked in connexion with the lifts for loading the kilns. The grain-cleaning factory is a four-storied building, about one-third of which is occupied by special and costly machinery, effecting no less than thirteen separations of the grain and removing dust, offal, and all foreign matters. This machinery is driven by steam-power. The whole of the buildings were designed by Mr. Thomas Miller, M.Inst. C.E., and Engineer to the Ipswich Dock Commission, and they have been carried out by the contractors, Mr. Fred. Bennett for the malthouse; Messrs. Cocksedge & Co. for the machinery; and Mr. R. Girling for the grain-cleaning factory.

Church Restoration in Radnorshire.—The restoration of the dilapidated old Church of St. Mary, Llanfaredd, Radnorshire, has been commenced, from plans prepared by Mr. Ernest Collier, of Carmarthen. The work includes new stone windows in place of the nineteenth-century square wooden ones, new buttresses, and crosses, an oak bell-turret at the west end, wood-block floor in the nave, and marble mosaic pavement in the chancel, oak choir stalls and reading-desk, oak pulpit, and an oak vestry screen. The contractor is Mr. J. D. Williams, of Knighton. The marble mosaic paving is supplied by Messrs. Mainzer & Kempthorne, of London.

Re-opening of St. Botolph's Chuch, Bishopsgate.—On the 23rd inst. the parish church of St. Botolph, Bishopsgate, was re-opened, after external restoration. The restoration, which has necessitated the building being closed for about five months, has been confined almost exclusively to the stone-work, which was found to be greatly decayed, and the cost has been about 2,000*l.* Mr. Bentley was the architect, and Messrs. Higgs & Hill the builders.

SANITARY AND ENGINEERING NEWS.

Uttoxeter Waterworks.—Mr. W. H. Radford, C.E., of Nottingham, has been instructed by the Uttoxeter Rural Sanitary Authority to inspect and report on the water supply of the town, and if the present supply is found inadequate, to prepare a scheme with plans, sections, report, and estimate for obtaining a further supply from the best available sources.

The Water Supply of Darwen.—At a special meeting of the Darwen Town Council, on the 13th inst., it was by a large majority decided to purchase the Pickup Bank and Daisy Green reservoirs from the Blackburn Corporation for 60,000*l.* The agitation for an increased water supply has now extended over two years, the alternative schemes being either Thirlmere reservoir of the Manchester Corporation or the Roddlesworth reservoir of the Liverpool Corporation.

Sewage Disposal at Worcester.—A three days' inquiry was commenced, on the 4th inst., at the Shire Hall, Worcester, by Colonel Ducat, Inspector of the Local Government Board, into the scheme of the Corporation for disposing of the sewage of the city. Mr. Lumley Smith, Q.C., opened the case for the Corporation, and stated that the Local Government Board at first suggested irrigation, and the Corporation arranged to purchase twenty-eight acres of land at Diglis, where they would have had space for irrigation. The purchase of that land was opposed by a number of persons who were under the impression that there was going to be a sewage-farm established at Diglis. That was an erroneous impression. It appeared, however, that the Severn Commissioners wanted a portion of the twenty-eight acres of land at Diglis for docks in connexion with the Severn Navigation Scheme. The Corporation, therefore, desiring to promote the navigation scheme, agreed to retain only six and a-half acres, at the north end of the site, the Commissioners taking the rest for their docks. The Corporation proposed to erect on that six and a-half acres certain buildings, in which the sewage would be received and dealt with. It was estimated that the scheme would cost 50,000*l.* All the tanks would be covered in, and there would be no possible means of anybody being offended by the works or seeing the sewage. He asked the inspector to consider whether, in his opinion, it would be essential that there should be any irrigation in addition to the precipitation which they proposed to carry on upon the Diglis site. The Corporation was advised that the process of dealing with the sewage on that piece of ground by chemicals would render the effluent perfectly clear and fit to go into the river. But if the Local Government Board would not sanction a scheme unless there was some irrigation, the Corporation could obtain land on the other side of the river which the effluent could be passed over.—Mr. Stephens, Q.C., for the opponents of the scheme, objected that Mr. Smith had presented two schemes of sewage disposal, and not one. He asked him to declare which the Corporation intended to stand by, precipitation or irrigation.—Mr. Smith replied that he should call evidence on all parts of the case as he had opened it.—The Inspector then proceeded to view the site at Diglis.—At a subsequent sitting Dr. Dodsworth, Medical Officer of Health for Chiswick, described the precipitation works which have existed there for eleven years. During that time there had been no nuisance, and in witness's opinion the proposed works at Diglis could be carried out without causing a nuisance.—Mr. Henry Macaulay, engineer and Borough Surveyor of Kingston, said he designed the sewage works there, which were completed in 1888. They had been at work ever since, and no complaint of any kind had reached the Corporation. The effluent went into the river just below the works. It was not treated by filtration in any way whatever. Witness had examined the site at Diglis, and had seen Hawksley's plan of the proposed works. He thought it a most suitable position.—The first witness called for the opposition was Mr. R. W. Binns, chairman of a committee of citizens formed for the purpose of opposing the present scheme. Mr. T. Wilesmith, a member of the Town Council, and Mr. A. H. Parker, architect, gave evidence as owners and occupiers of property near the proposed works. They had reason to believe that the carrying out of the proposed scheme would depreciate the value of property in the district. Mr. E. Ryde, surveyor, London, said he had visited the site at Diglis, and did not consider it suitable for sewage works. If the city went on increasing it would want larger sewage works. The Dean of Worcester gave evidence against the scheme. Dr. Swete, county analyst, gave his opinion strongly against the scheme. The works should certainly be taken further from the city. Mr. Marten, Engineer to the Severn Navigation Commissioners, stated that the site was too low down and too near the town, which was growing or would grow in that direction when the new docks were established if these works were not carried out. The site suggested was too small to admit of sewage works being constructed for a town which might be expected to grow very much. Mr. Stephens, Q.C., having spoken, and Mr. Smith, Q.C., having replied for the Corporation, the inquiry concluded.

Electric Lighting, Christ Church, Victoria-street.—This installation has proved, so far, a success, not only as regards the increased amount of light, but also in that the first cost was much less than gas; as the estimate for installing electricity was about 75 per cent. lower than that for putting in gas-pipes and fittings. This saving is mainly brought about by using incandescent lamps of 100 candle-power; eight of these, in cut-glass lanterns, are suspended by flexible copper leads, strengthened with steel wire; on each of the side aisles two similar lamps, placed out of sight, illuminate the chancel. All the lamps can be lighted or turned out independently, and a few of 16 candle-power are also fixed about the building to be used for partial illumination. The cost of running is not expected to exceed the sum previously paid for gas, as half the lamps can be extinguished during the sermon, also with the high candle-power lamps there is a great saving in renewals compared with the ordinary 16-candle lamp, the cost of the former being only twice the latter and giving over six times the light. The electricity is obtained from the Westminster Company's mains, which are run to a meter; the current can be shut off by a double-pole switch, and fusible mica-foils prevent any danger from fire due to excess current or a short circuit in the building. The arrangements have been carried out under the superintendence of Mr. Killingworth Hedges, M.Inst.C.E.

Maldon Sewerage.—The works of sewerage and of sewage disposal for the town of Maldon, Essex, were opened by the Mayor and Corporation, on the 4th inst. The works have been carried out from the designs and under the superintendence of Messrs. R. B. Grantham & Son, of London, by Mr. Osenton, the contractor; Mr. John Wood acting as clerk of works. The Town Council has determined to form a promenade along the frontage of the River Blackwater, and to lay out a recreation-ground in connection therewith.

Pollution of the River Calder.—On the 4th inst., Mr. J. T. Harrison, M.Inst.C.E., held a Local Government inquiry at the Board Room, Earlsheaton, near Dewsbury, relative to an application by the Soothill Nether Local Board, for sanction to borrow 12,000*l.* for the purpose of carrying out a complete scheme of main drainage and sewage treatment. Mr. W. C. Handley, Clerk to the Board, stated that the population of the district was about 5,750, the effective rateable value 13,113*l.*, and the amount of the present debt 1,530*l.* Mr. Malcolm Paterson, M.Inst.C.E., Bradford, the Board's Engineer, produced the plans and sections of the scheme, and explained the details. The scheme is entirely by gravitation,

there being two main outfall sewers meeting at one point, and the method of treatment proposed is chemical precipitation in three tanks working separately, combined with filtration on land specially prepared to a depth of 5 ft. or 6 ft., the total area being four acres. The principal features of the scheme are (1) separation of storm-water from the sewage; (2) utilisation of the fall of sewage for mixing chemicals; and (3) the taking of the manufacturing refuse into the sewers, thus striking at the root of river pollution, a step which, in view of the terrible state of the River Calder, will doubtless be watched with interest by the West Riding County Council. The Inspector advised the acquisition of the land at once by conditional agreement, and stated that in no case would the Local Government Board sanction the discharge of sewage clarified by precipitation, without its passing over land, not even the supernatant water periodically discharged before cleansing the tanks; and further stated that with this proviso he would recommend the granting of the application.

Drainage, West Ardsley.—At the meeting of the Rural Sanitary Authority of the Wakefield Union, held on the 12th inst., it was resolved to adopt the plans and estimates prepared by their engineer, Mr. Frank Massie, Assoc.-Mem. Inst. C.E., for the construction of an outfall-sewer, with sewage works at Hey Beck, for the drainage of the Westerton District in the township of West Ardsley, and for the purchase and laying out of two acres of land for the treatment of the sewage from the Lower-street drainage area in the same township. It is proposed to apply to the Local Government Board for powers to borrow the sum of 2,800*l.* for the completion of first section of this scheme.

FOREIGN AND COLONIAL.

France.—The Académie des Beaux-Arts has named Prince Czartoriski Honorary Corresponding Member in place of the late Sir Richard Wallace. ——The death is announced, at Mas-Thibert, of the painter Isnard, a former pupil of M. Gérôme. He was known as a painter of landscapes in the Arles district, as well as of figure pictures of local character.——The Subscription Committee which is formed to raise a statue to General Margueritte at Sedan has decided that instead of a simple statue, there should be a monument on a large scale, which should be consecrated to all the officers and soldiers who fell on the 30th and 31st of August and the 1st of September, 1870. The Committee propose to open a competition for this, and hope to attract competitors from among the highest rank of French sculptors.——The General Exhibition at Ajaccio (Corsica), to be opened in January, is in active preparation.——A competition has just been opened by the Municipality of Compiégne for the enlargement of the hospital for aged men in that town. It is intended to spend 450,000 francs on the new work.——The excavations have been commenced for the construction at Paris of a Hôtel to form a centre for the principal telephone services. The building will stand on ground bounded by the Rue du Louvre, Rue Jean Jacques Rouss-au, and Rue Guttenberg, where the principal façade will be. The arrangement of the plan will in some degree correspond with that of the new Hôtel des Postes.——The direction of the National Garde Meuble has sent an important collection of artistic objects to St. Petersburgh to decorate the new hotel of the French Ambassador. Among these are twelve fine Gobelins tapestries, an immense carpet, and a very fine piece of Louis XVI. furniture from the old palace of St. Cloud.——The Government has commissioned M. Guilbert Martin, the well-known Mosaic artist, to restore a Mosaic pavement discovered by M. Renan near the ancient site of Tyre. These Mosaics, which belonged to a Byzantine church, are to be placed in the Louvre, in the room preceding the staircase of the Pavillion, Mollien.——M. de Baudot has opened at the Trocadéro an annual course of instruction in architecture. He has commenced with lectures on the methods of composition of French Mediæval and Renaissance architecture, and their application to modern architectural design.——The new gallery of casts at the Trocadéro has just been opened to the public.——The Louvre has just received two works by Delacroix, left to the Museum by the late Philippe Burty, the Inspecteur des Beaux Arts, who died in June last; these are a pen drawing called "La Monte au Calvaire," and an album of notes, drawings, and water-colour sketches.

Berlin.—Nine designs for the proposed memorial church to the deceased Emperor William I. have been placed before the Emperor for approval. He has chosen a design in Romanesque style, planned to hold 1,600 seats, bearing the name of "Baurath" Schwechten, for erection.——The Norwegian architect Munthe, who has built Holmenkollen, so much admired by the Emperor on his last northern trip, has received a commission to build a boot-house (in Norwegian style) in the Castle grounds in Potsdam. ——A hunting-box is to be built for the Emperor in East Prussia by the same architect.

Sweden.—Herr J. G. Clason, a prominent architect, in the employ of the Stockholm Building Board, has been appointed Professor of Architecture at the Technical High College in the Swedish capital.——At the last meeting of the Architectural Section of the Swedish Technological Association the question of a defined classification of tiles and bricks, according to strength, colour, and finish, was discussed, in order to obviate the frequently occurring disputes on delivery. It was decided to appoint a committee of architects and engineers to frame a set of technical regulations respecting the qualities that should be shown in tiles and bricks.——The second part of an interesting work has just been issued in Stockholm, viz., Drawings of Objects in the Northern Museum, by Artur Hazelius. This part embraces Iceland, and is accompanied by 108 drawings of Norse antiquities of all kinds, as well as designs of ancient buildings, &c.

Norway.—The town of Hammerfest, situated close to the North Cape, and which was recently totally destroyed by fire, is rapidly being rebuilt. ——The new Imperial railway pavilion to be built at Magdeburg is to be in the Norse style, at the request of the Emperor, who took a great fancy for this style of architecture during his sojourn in Norway.

Denmark.—The Danish Government has presented a Bill to the Parliament demanding a first instalment of the sum to be expended in building a Museum of Industries and Arts in Copenhagen—viz., 20,000*l.*, and an additional 550*l.* a year for ten years towards its maintenance; and also a Bill for a new Museum of Arts, to cost 21,000*l.* In connexion with the first-named institution, drawing and artisans' classes are eventually to be established. Various great works are to be carried out in Copenhagen, among which are the erection of a Municipal Central Electrical Station, at a cost of 110,000*l.*; the making of four new great thoroughfares in the northern part of the city; the erection of two large public schools; the building of a picture and sculpture gallery; and the construction of a new spring-water aqueduct, at a cost of 12,500*l.*, the length being 5,000 ft. The Government has also adopted a scheme for rebuilding the Royal Frederick's Hospital and the Royal Children's Institute, besides the building of a new surgical college, at a total cost of 235,000*l.*; but this work will take several years to carry out. Finally, new barracks are to be built in Copenhagen at a cost of 112,000*l.*——For some years past the Danish Ministry of the Interior has attempted to introduce a suitable system of heating churches in the country without disfiguring them, but none has proved satisfactory. The Ministry has in consequence commissioned an engineer and an architect jointly to elaborate a plan to attain the object in view.

MISCELLANEOUS.

Glasgow Philosophical Society.—Mr. W. P. Buchan, sanitary and ventilating engineer, has been elected President of the Sanitary and Social Economy Section of the Philosophical Society of Glasgow in succession to Mr. John Honeyman, F.R.I.B.A. At the meeting of the Society on the 19th inst. Mr. Buchan read a paper on "A Problem in Ventilation by Heat,"—illustrated with experiments. We print this paper on another page. In the discussion which followed, Professors Bottomley and Blyth and other members took part. On the motion of the chairman, Professor McKendrick, F.R.S., a vote of thanks was awarded to Mr. Buchan for his paper.

Sanitary State of Cadiz.—The British Consul at Cadiz, in a report on the trade of that district for 1889, observes:—Taking the statistics for the last eleven years, the death-rate of Cadiz shows the high proportion of 44·6 per 1,000. Out of 2,829 deaths in 1888, 913, or 32·27 per cent., were from diphtheria, typhus fever, and diseases of this class. In ten of the most healthy streets the average death-rate during the last ten years was 19 per 1,000; in ten other streets, 41 per 1,000; in Calle Venzerla, 100 per 1,000; in Campo de Santa Elena, 102 per 1,000; in Calle Campillo de los Cloches and Calle Correo, 111 per 1,000, reaching the maximum of 115 per 1,000 in Calle San Fernando. It is scarcely credible that Cadiz, encircled by the sea, being an island connected with the mainland by a series of causeways seven miles long, should be so unhealthy, and its hygienic condition so unfavourable. The causes of this excessive mortality are the want of an adequate supply of water and the absence of a proper system of drainage. The supply of drinking water is limited, and costs 3*s.* 10*d.* per 1,000 gallons. There is no water to flush the sewers, and in summer the effluvium in the streets is often so offensive that people are forced to seek relief in the purer air of the neighbouring villages. A project is on the *tapis* for the construction of a proper system of sewerage on the most approved modes or plans, with a sufficient supply of salt water to regularly flush the sewers.

Improvements at Burnley.—A Local Government Board inquiry at Burnley has just been held by Mr. S. J. Smith, C.E., Inspector of the Local Government Board, into the application of the Corporation to borrow 27,000*l.* for sewage purposes, 12,000*l.* for laying out the public park, 2,100*l.* for street improvements, and 1,060*l.* for markets. The Town Clerk stated that, at the suggestion of the Inspector, in viewing the sewage works, they had agreed to amend the application to 30,000*l.* for sewage purposes, in order to add other four to the present eight tanks. With respect to the second application for 12,000*l.*, the Town Clerk explained that the land (twenty-eight acres) had been presented to the town by Sir John Hardy Thursby. There was no opposition to any of the applications.

The Channel Bridge.—According to the daily papers, M. Renault, engineer and marine hydrographer, has presented to the Minister of Public Works and the Minister of Marine his report upon the soundings taken in the Straits of Dover. His report is favourable to the construction of a bridge over the Channel.

Proposed New Ship Canal in the Midlands. —The North Staffordshire Railway Company, which has its Cheshire terminus at Crewe, has given notice of its intention to apply for an Act of Parliament allowing them to widen and deepen their Trent and Mersey navigation and other canals, so as to render them navigable for vessels of much larger burden. The widening and deepening of the canal will transform it into a great ship canal, and will necessitate the construction of eleven new locks. The new ship canal will provide direct communication for vessels of heavy tonnage for the whole of the populous area between the Cheshire shore of the Mersey and the Potteries of Staffordshire.

Electric Lighting in Spain.—It is stated that a large central electric-lighting station has recently been completed in Madrid, at a cost of 80,000*l.*, and electricity is already being distributed by underground mains to houses at a distance of two miles. The undertaking is in the hands of an English company holding a concession from the Madrid authorities.

Royal Victoria Hall, Waterloo Bridge-road, S.E.—The "Penny Science Lectures" to be delivered in this hall during December include the following:—On December 2, Mr. E. Wethered will lecture on "Rocks seen through a Microscope." On December 9, Dr. Foster Morley will lecture on "What we get from Coal Tar," with experiments. The oxyhydrogen lantern will be used with these lectures.

Junior Engineering Society.—The presidential address was delivered to the members of this Society on the 21st inst., at the Westminster Palace Hotel, by Professor Silvanus P. Thompson, D.Sc., on "Electro-Magnetic Mechanisms." The Society's prize was presented to Mr. A. H. Tyler for the best paper of the past session, and a vote of thanks was passed to Professor Perry, D.Sc., F.R.S., the retiring president.

Artificial Asphalte.—A Danish engineer, Herr J. Erslev, has obtained a patent for a process of making artificial asphalte. He mixed 80 to 90 parts of carbonate of ammonia with 10 to 12 parts of coal tar, and when these have been well mixed adds 100 parts of fine sand or dry clay. The whole having been thoroughly kneeded the substance is cast in blocks, and used like ordinary asphalte. The artificial substance resists changes of temperature and hot water, whilst showing a hardness equal to the natural. It also adheres well to any material upon which it is laid.

The Baltic-White Sea Canal.—It is reported from Archangel that the preliminary surveys for the canal that is to connect the Baltic with the White Sea have been completed. The new canal will commence from the Lake Omga, as there is already a canal between the latter and the Finnish Gulf. The length of the new canal is estimated at 135 miles, of which eighty-two miles are natural waterways. It will be 63 ft. wide and 10 ft. deep, but at the locks, where ships have to pass each other, the width will be 112 ft. The cost of the canal is estimated at 7,500,000 roubles, or 750,000*l.* The fall of the canal between the White Sea and Lake Omga will be about 15 ft. Naturally, great importance is attached to the construction of this line of communication, as, apart from its strategical value, it will open up the great metal deposits and rich forests in Northern Russia to commerce.

A Long Electrical Railway.—A project has been mooted for the construction of an electrical railway between St. Petersburg and Archangel, on the White Sea. The length is estimated at about 800 kilomètres, and the cost at 2,000*l.* per kilomètre. It is proposed to work the railway from generating-stations along the line. It is suggested that an electrical railway would work better than an ordinary one.

Memorial Window, All Saints' Church, Babbacombe.—At All Saints' Church, Babbacombe, on the 22nd inst., was dedicated a stained-glass window placed in the south aisle to the memory of the late Duchess of Sutherland. The window, which consists of three lights, is the work of Messrs. Mayer & Co. The subject of it is, "The Holy Women at the Tomb."

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised	Premium.	Designs to be delivered.
*New Court House, Peel	Isle of Man Govnmt.	20*l.*	Jan. 15
*Public Baths and Public Library	*Dewsbury Corporation	50*l.*	Jan. 21

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Limestone Gravel	Hendon Local Board	S. S. Grimley	Dec. 1
Steel Work for Bridges, Rails, &c.	India Office	*Official*	Dec. 2
*Chapel, Fenton, Staffs.		Whincop & Perkin	do.
*Alterations, Additions, &c. at Holme Court, Isleworth	Chiswick, &c. Industrial School	*Official*	Dec. 3
Steel and Wrought-iron Plate Girder Work (195 tons)	G. W. R. Co.	do.	do.
*Offices, &c. Bristol Station	do.	do.	do.
Ten Cottages, Church Fenton, nr Tadcaster	N. E. R. Co.	Wm. Bell	do.
Paving Works, &c.	Plymouth Corporation	Geo. D. Bellamy	Dec. 4
*28 Cottages at Child's Hill	M. E. Co.	*Official*	Dec. 5
*Supply of Ferrules with Stop Taps	Wakefield U.R.S.A.	F. Massie	Dec. 6
*Stores for 12 Months	G. N. R. Co.	*Official*	do.
New Railway	Crieff and Comrie Ry. Co.	John Young	do.
Parkinson-lane Improvements	Halifax Corporation	E. R. S. Scott	Dec. 8
*Paving Works	Camberwell Vestry	*Official*	do.
*Sewers Works	do.	do.	Dec. 9
*Roadmaking Works	do.	do.	do.
*Making-up and Paving Roads	Willesden Local Board	O. Claude Robson	do.
Streets Improvements, Ynyshir	Ystradyfodwg Loc. Bd.	J. W. Jones	do.
*Roadmaking and Paving Works	Fulham Vestry	W. Sykes	Dec. 10
Villa Residence, Elgin, N.B.		C. C. Doig	do.
*Mortuary Buildings	Hackney Bd. of Wks.	Jas. Lovegrove	do.
*Removal of Dust, Dirt, Ashes, &c. &c.	Crown Estate Paving Comrs.	*Official*	do.
Sanitary Pipes, Paving, and Kerb Stones	Newcastle-on-Tyne Improvement Com.	do.	do.
Steel and Iron Castings, Timber, &c.	Tees Conservancy Com.	do.	Dec. 11
Ironwork, Buoys, Timber, &c.	Com. of Irish Lights	do.	Dec. 12
*Works and Materials	Parish of St. George, Hanover-square	G. Livingstone	Dec. 13
*Laying-out Recreation Ground, Wapping	LondonCountyCouncil	*Official*	Dec. 15
Sewage Disposal Draining Works	Auckland (Durham U.R.S.A.	C. Johnston	do.
Sewering and Kerbing Streets	Leeds Corporation	*Official*	Dec. 16

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*New Works at Heaton	N. E. R. Co.	W. Bell	Dec. 17
Ditto (Ironfounders' Work)	do.	do.	do.
*Alterations, &c. at West Yard	Bournemouth T. C.	F. W. Lacey	Dec. 18
*Artisans' Dwellings, Swansea	The Directors	E. Bath	Dec. 19
*Fireproof Mill and Offices, Salford	Fustian Cutting Machine Co. Lim.	Bradshaw & Gass	No date
Iron, Steel, Castings, Timber, &c. Quayside, Newcastle	Strakers & Love		do.
23 Workmen's Houses, near Burnopfield Colliery, Newcastle-on-Tyne	John Rowes & Partners, Lim.		do.
Laying a Gas Main, New Kilmainham, Ireland	The Commissioners	Hampden Shaw	do.
Pipe Sewer (12-in.) New Kilmainham	do.	do.	do.
Three Cottages, Caerphilly, near Cardiff		Phillips & Holdgate	do.
New Club House	Hyde Park (Leeds) Recreation Club, Lim.	Walter A. Hobson	do.
Mission Room, Walbottle, near Newburn-on-Tyne		Hicks & Charlewood	do.
Widening and Sinking Two Shafts, Longton Hall Colliery, Staffs	Geo. A. Mitcheson		do.
Excavating and Carting, New Wortley, Leeds	Buckton & Co.		do.
Heating, &c. Co-operative Stores, Ashington, Morpeth	Equitable Co-op. Soc.		do.
New Premises, near Morpeth	Guide Post Co-op. Soc. Lim.	Davidson & Bendle	do.
New Post-office and Postmaster's House, Northwich	Mr. Rathbone		do.
Detached House, Hartshill, Staffs.		Elijah Jones	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary	Applications to be in
Superintendent Harbour Improvements, Secretary, &c.	Westport (Ireland) Harbour Comms.	100*l.*	Dec. 1
*Building Inspector	Hornsey Local Board	3*l.* 3*s.* weekly	Dec. 8
*Town Engineer	City of St. John's, Newfoundland	Not stated	Dec. 9
*Chief Clerk (Sanitary Department)	St. Pancras Vestry	200*l.*	Dec. 10
*Sanitary Inspectors (3)	do.	100*l.* each	do.
Surveyor	EastBroxton(Cheshire) Highway Board	100*l.*	Dec. 31

Those marked with an Asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv., vi., and viii. Public Appointments, p. xvi.

THE ENGLISH IRON TRADE.—Notwithstanding the almost complete restoration of the equilibrium in the Money Market, the effects of the recent troubles in the financial world are still being felt in the English iron market. The latter continues lifeless and weak. The Glasgow warrant market has again been flat during the past week, and fluctuations have been frequent. The other pig-iron markets have maintained their downward tendency, purchasing being restricted to the smallest possible limits. A recovery, however, is looked forward to, as works are kept regularly going with orders in hand. As in crude metal, there is an absence of new business in finished iron and steel, and the former can be obtained, in the North of England at any rate, at fully 5*s.* per ton below the prices which ruled a fortnight ago. Steel is weaker in the north and Lancashire, and in Scotland, but stiffer in the north-west. Further orders have been placed for ships. Engineers continue fairly active.—*Iron.*

PRINTING A NEWSPAPER WITH A 15-TON STEAM ROAD-ROLLER.—Owing to an accident at the gas-works, the town of Middlesbrough was last Saturday wholly deprived of gas for all purposes. This did not reach the ears of the manager of the *North-Eastern Daily Gazette* until ten o'clock; but a novel idea was evolved and promptly acted upon. A gang of workmen was hastily obtained from neighbouring works, and heavy iron plates were laid in the yard adjoining the printing-room, through the wall of which a large aperture was made. A 15-ton steam road-roller was then got into position, shored, and rapidly geared, and one hour only after the ordinary time of starting the powerful "Marinoni" printing-machines began work, the issue of 64,000 copies being produced without a single hitch in this unique manner.

COLLAPSE OF A BUILDING AT NEWPORT.—According to the *South Wales Daily News*, a serious disaster occurred at Newport on the 21st inst., resulting in the death of one man and serious injury to another. It appears that between 7 and 8 o'clock in the morning a number of workmen were engaged on the improvements in High-street, when suddenly one of the iron beams which had served as a support to the old premises, which were being taken down, gave way, and the front wall collapsed, carrying with it the scaffold upon which the men were at the time working. Two of the men were buried beneath the *débris*, and one of them, a young man named George Davies, was killed, his neck having been broken. Another man, named Eli Sterry, was seriously injured, and was conveyed to the infirmary, where he was detained.

MUSIC, DANCING, AND THEATRE LICENCES.—The London County Council have just notified that in future they will not entertain any application for a new licence for music, dancing, or stage plays, unless the owner or lessee of the building in question possesses a Council's certificate under the Act of 1878, or, in the case of a building in course of construction, a provisional approval by the Council. Such provisional licences granted during the current year will not necessarily be renewed next year, as the Committee will base their decisions upon the way in which they find their requirements have been satisfied.

LEGAL.

IS A "SKY-SIGN" A TEMPORARY STRUCTURE?

AT the Marylebone Police-court on the 21st inst., Mr. George Rolls, the proprietor of the Lord Elgin Hotel, Maida Vale, was summoned by the London County Council for setting up an erection of a movable or temporary character, the same not being exempted by the first part of the Building Act of 1855, and without having first obtained a licence. Mr. Horace Avory, who appeared in support of the summons, in opening the case, said these proceedings were being taken with the object of testing the question whether the existing law was sufficient to deal with the erections which were now generally known as "sky-signs," which were erections for advertisement purposes on the roofs of houses. As these erections were a possible additional danger to the public it was quite clear that they should be under the control of the local authorities. He would call attention to the fact that the words forming the advertisement in this particular "sky-sign" were 5 ft. in length; the results might be serious if in a gale one or more of these letters were blown down into the street. The sign on the defendant's public-house was 30 ft. above the top of the house and 45 ft. wide. As to whether this "sky-sign" was an erection of a temporary nature, if it was not, then it must be a permanent addition to the house, in which case the District Surveyor ought to have received notice of the work, which was not done.—Mr. A. Duvaston, surveyor under the County Council, said he had examined the "sky-sign" in question. Each of the wooden letters would weigh about ½ cwt. No application had been made to the Council for a licence to put up the erection.—Mr. Forrest Fulton, for the defence, contended that the facts disclosed showed that the section under which the summons was issued did not apply in this case. The section dealt exclusively with wooden erections, whereas this sign was composed for the most part of iron.—Mr. Lewis Solomon, architect, deposed that the sign was put up in the most substantial manner, and with a yearly supervision would probably remain safe for ten years.—Mr. Mead, who had taken time to consider the questions raised, held that the term "wooden" applied to the entire sentence in the section, and that the words "structure" and "erections" were convertible terms. He was also with Mr. Fulton on the other point, that this sign was not of a movable or temporary character. He, therefore, dismissed the summons, with 44*s.* costs.

WIDTH OF ROADWAY: WHAT IS A NEW STREET?

At the Woolwich Police-court last week, before Mr. Kennedy, the magistrate, Mr. James Mackintosh, the lessee of some building property fronting Albert-road, North Woolwich, was summoned by the London County Council to compel him to put back the dwarf wall of the forecourts to some dwellings recently erected alongside the said road, as not being 20 ft. from the centre thereof. The road was made up and taken over by the Local Board two years ago. It has a footpath on the side adjoining the buildings, but none on the other, which is merely the fence of the North Woolwich Railway, its total width being 31 ft.

Mr. Mackintosh is the building lessee of the lands, which belong to Messrs. Kennard, and has built three terraces of artisans' dwellings to front the same about 8 ft. inside the fence dividing the road from the property, and had put up a dwarf wall (which he intended to continue the whole length) in front of the houses 2 ft. inside the road footpath, and parallel with the old fence; thus voluntarily giving up a strip of land to the road, which it was claimed was not a new street or road within the meaning of the Metropolitan Building Acts. The London County Council served him with notice to pull down the same, and summoned him for not doing so, claiming that it must be put back to 20 ft. from the centre of the road, or about 3 ft. more than he had arranged, which he declined to do, acting on the advice of Messrs. Tapp & Jones, of Westminster, the surveyors for the owners.

The case on behalf of the lessee was argued by Mr. Scrutton, barrister, and in the result, the magistrate dismissed the summons, with £5. 5*s.* against the London County Council, and refused to grant the latter a case for appeal.—*Communicated.*

MEETINGS.

MONDAY, DECEMBER 1.

Royal Institute of British Architects. — Ordinary General Meeting. 8 p.m.

Society of Engineers.—Mr. J. J. F. Andrews on "Ship Caissons for Dock Basins and Dry Docks." 7.30 p.m.

Society of Arts (Cantor Lectures).—Professor Vivian B. Lewes on "Gaseous Illuminants." II. 8 p.m.

Victoria Institute.—Professor Hull, F.R.S., on "The Geology of Egypt." 8 p.m.

Clerks of Works' Association (Carpenters' Hall).—Monthly meeting. 8 p.m.

Royal Institution.—General monthly meeting. 5 p.m.

Liverpool Architectural Society.—Mr. T. Harnett Harrison, F.R.I.B.A., on "House Drainage." 7 p.m.

TUESDAY, DECEMBER 2.

Institution of Civil Engineers.—(1) Further discussion on the paper by Professor John Milne, F.R.S., and Mr. John McDonald on "The Vibratory Movements of Locomotives," (2, time permitting) Mr. F. E. Robertson on "The Sukkur Bridge at Benares." (3) Mr. E. W. Stoney on "The new Chittravati Bridge, Madras Railway." 8 p.m.

Society of Biblical Archæology.—8 p.m.

Manchester Architectural Association.—Mr. G. H. Willoughby on "Terra-Cotta: its Advantages Relative to Town and City Buildings." 7.30 p.m.

Glasgow Architectural Association.—Mr. W. J. Millwain on "Ornament." 8 p.m.

WEDNESDAY, DECEMBER 3.

Society of Arts.—Mr. James Dredge on "The Chicago Exhibition, 1893." 8 p.m.

British Archæological Association.—(1) "The Epinal Glossary," by Mr. W. de Gray Birch, F.S.A.; (2) "Notice of a Brass recently discovered at Gloucester," by Mr. Cecil Davis. 8 p.m.

THURSDAY, DECEMBER 4.

Society of Antiquaries.—8.30 p.m.

Royal Archæological Institute.—Three papers, including two by the Rev. Precentor Venables.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

18,883.—FIRE-GRATES: *G. E. Arnold.*—According to this invention, a moveable back is placed in the ordinary position at the back of the grate. This is equally divided horizontally, but the halves are connected together by a hinge or joint. Stops and arrangements are made for a circular cavity underneath the grate and to allow for the rising and falling of the division. The action of moving this part carries the fuel forward to the under part of the fire, and when reversed the parts fall and remain in their ordinary position.

19,575.—SASH WINDOWS: *S. G. Burgess.*—Striking plates with recesses are, according to this invention, screwed to each side of the fixed slide frames, and spring bolts or catches, with operating levers sunk into the sashes, are used to actuate the same.

20,691.—WARMING BUILDINGS: *R. Little.*—According to this invention, induction pipes laid under and parallel with hot water, steam, or other heating pipes have openings or fresh-air outlets in the sides of pipes, to allow the circulation of the heated air.

8,398.—REVERSIBLE SASHES: *J. N. Hancock.*—A countersunk metal socket, fitted to receive the cone head of the screw, is placed in the sash so as to offer no resistance to the sliding the sashes up or down. The two halves are fastened so as to run as one, but when desired the inner half may be turned to allow the outside of the window to be cleaned, or for ventilation. The centres also may be used for mirrors.

12,011.—GATE HINGES: *G. Rohbach.*—The hinge which is the subject of this patent consists of two angular plates, one provided with an upward pointing pintle and the other with a socket or series of holes to receive the said pintle. In hanging the gate the plate of the lower hinge, which is provided with the pintle, is attached to the post, and the plate having the holes for the pintle is attached to the gate, the reverse being the case at the top of the gate, and in both cases the horizontal part of the hinge with the holes is longer than the corresponding part with the pintle. The gate so hung cannot be removed without first removing one of the angle plates. By placing the pintle on the hinges in different holes the pitch and swing of the gate may be regulated and the gate may be caused to tip slightly towards the post, so as to prevent it from sagging and cause it to close of its own gravity.

13,880.—SCAFFOLD FASTENINGS: *O. H. Gardner.*—This is a device by means of which scaffolding may be clamped together without injuring or weakening it, so that it may be used again and again. It consists of a round bar of metal, having mounted thereon a roller provided with a lever by which it may be partially rotated on its axis, and a chain provided at one end with a hook to clamp the uprights and cross-pieces of a scaffold. When the roller is moved the chain is wound and tightened.

14,271.—DOOR HANGER: *C. A. Reynolds.*—In sliding-doors the doors are adjusted when they sag by means of a screw and nut, which raises them so that they run clear in the bottom groove.

NEW APPLICATIONS FOR LETTERS PATENT.

November 10.—18,045, H. Piper, Anti-friction Hinge.—18,092, A. Boult, Holder for Beeswax, &c., for Rubbing of Floors.—18,095, J. Le Messurier, Window-fastenings, &c.

November 11.—18,106, T. Harrison and W. Chaloner, Chimney-tops.—18,131, E. Hatton, Ventilating Valves for Wall Ventilators.—18,139, W. Adamson, Ventilating and Damp-resisting Brick.—18,150, E. Marrer, Dados for Rooms, &c.—18,153 and 18,156, C. Rogers, Dies for Making Rolled-wood Screws.—18,164, J. Annear, Grinding and Sharpening Edged Tools.

November 13.—18,263, E. Jollye, Grooved, Channelled, Interlocking, Reversible, Weather-tight, and Self-ventilating Boarded Roofing.—18,269, R. Ashworth and W. Evans, Hinges for Automatically Closing Doors and Gates.—18,275, W. Ainsworth, "Carpenter's Plug-cutter."

November 14,—18,377, W. and W. Gray, Ventilating Appliances.—18,382, J. Woodward, Wearing Surfaces of Stair-treads, Floors, &c.—18,397, R. Hewetson, Fastener for Doors or Windows.

November 15.—18,433, J. Raffety, Ventilation.—18,455, G. Kingsbury, Dust, Rain, and Draught-preventer for Window-sashes, Doors, &c.—18,459, C. Haewsler, Fire- and Weather-proof Roofing.—18,466, A. Louis, Air-heating Stoves and Fireplaces.—18,468, F. Jurschina and R. von Gunesch, Artificial Stone Building Blocks, &c.—18,474, W. Chapman, Window-fastening.—18,476, J. Hablitzel, Planes.

PROVISIONAL SPECIFICATIONS ACCEPTED.

1,795, W. Roff, Water-closet.—11,964, G. Stokes & Co., Laths for Venetian Blinds, &c.—14,071, W. Sanday, Work-benches and Fittings for Planing Wood, &c.—15,177, J. Wilson, Raising or Breaking-up Concrete or similar flooring.—16,622, W. Drayson & R. Bright, Basins for Urinals, &c.—16,962, H. Shepherdson, Preventing Vibration in Windows and Doors.—16,993, T. Dawson, Draught or Dust Excluders.—17,072, J. Smith & W. Foster, Cupboard Turns or Fasteners for Doors.—17,151, G. Dallas, Polishing Wood, &c.—17,176, H. Coleman, Ladders.—17,192, H. Wright, Bracket or Wall Stone.—17,198, R. Bowker, Chimney Tops.—17,597, G. Chapman, White Lead.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

746, S. Fawthrop, Sash Bars and Glazing Devices for Roofs, &c.—2,263, W. Heywood, Glazing and Roofing Buildings.—3,345, E. Ives & G. Barker, Lifting, Launching, and Ending Bridges, &c.—3,942, G. Smith & B. Cooper, Joining Lead Pipes.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

NOVEMBER 17.—By *G. A. Wilkinson:* 59 and 61, High-st., Grays, Essex, u.t. 65 yrs., g.r. 12*l.*, 2,200*l.*; 3 to 9 (odd) Shakespeare Villas, u.t. 65 yrs., g.r. 8*l.*, r. 94*l.*, 900*l.*—By *Chesterton & Sons:* 22, Archer-st., Nottinghill, u.t. 60 yrs., g.r. 8*l.*, r. 50*l.*, 400*l.*—By *Geo. Gouldsmith, Son, & Co.:* 4, Harley-gardens, Kensington, u.t. 41 yrs., g.r. 7*l.*, 750*l.*—By *Vaughan & Co.:* 24, Rutland-st., Hampstead-rd, u.t. 47 yrs., g.r. 5*l.* 10s., 670*l.*; 120, Stanhope-st., Regent's-pk., u.t. 31 yrs., g.r. 4*l.*, r. 50*l.*, 610*l.*; i.g.r. of 24*l.* 10s., at a peppercorn, u.t. 31 yrs., Camden-town, 420*l.*; i.g.r. of 21*l.*, u.t. 28 yrs., g.r. 5*l.*, Regent's-pk., 280*l.*; i.g.r. of 15*l.*, u.t. 20 yrs., g.r. 1*l.*, Hampstead-rd., 180*l.*

NOVEMBER 18.—By *Debenham, Tewson, & Co.:* 190, Green-st., Bethnal Green, f., r. 50*l.*, 640*l.*; 63 and 65, High-st., Wandsworth, f., r. £200, p.a., 3,800*l.* By *Dowsett & Co.:* F.g.r. of 28*l.* p.a., with reversion in 32½ yrs., Clapham-rd., 1,165*l.*; F.g.r. of 75*l.* 12s. p.a., with reversion in 70 yrs., North Kensington, 1,990*l.*; L.g.r. of 93*l.* 16s. p.a., u.t. 87 yrs., Wandsworth-rd., 1,780*l.* By *Mullet, Booker, & Co.:* 8 and 8a, Kensington Palace-gardens and 9, Palace-gardens-mews, Kensington, u.t. 52 yrs., g.r. 117*l.* 6s., 14,300*l.*; No. 8, Victoria-grove-mews, u.t. 33 yrs., g.r. 5*l.*, 240*l.* By *Boyce & Evens:* 38 to 46 (even) Huntingdon-st., Hoxton, u.t. 79 yrs., g.r. 33*l.* 15s., 2,195*l.*; 48 to 54 (even) Huntingdon-st., u.t. 79 yrs., g.r. 25*l.*, r. 200*l.*, 1,790*l.*; 63, 65, and 67, Mildmay-grove, Stoke Newington, u.t. 59 yrs., g.r. 17*l.* 5s., r. 122*l.*, 1,060*l.*; 69, 71, and 73, Mildmay-grove, u.t. 59 yrs., g.r. 17*l.* 5s., r. 120*l.*, 1,105*l.*; 22 and 24, Navarino-rd., Dalston, u.t. 62 yrs., g.r. 12*l.*, r. 100*l.*, 1,075*l.*

NOVEMBER 19.—By *Mansell & Rowe:* "Belmount," Church-rd., Norwood, u.t. 73 yrs., g.r. 26*l.*, 890*l.*—By *Rogers, Chapman, & Thomas:* 91, Alderney-st., Pimlico, u.t. 41 yrs., g.r. 8*l.* 10s., r. 60*l.*, 525*l.*; A moiety of 2 and 4, Queen's-rd., Notting-hill, u.t. 53 yrs., g.r. 16*l.*, 205*l.*

NOVEMBER 20.—By *Alderton & Co.:* No. 149, New Bond-st., City leasehold, r. 350*l.* p.a., 10,000*l.* By *Hood & Sons:* 84, Clarendon-st., Paddington, u.t. 62 yrs., g.r. 5*l.* 10s., 235*l.* By *F. W. Glazier:* 38, James-st., Camden-town, u.t. 60 yrs., g.r. 7*l.* 7s., 300*l.* By *H. J. Bliss & Son:* 11 and 13, Berger-rd., Homerton, f., r. 49*l.* 8s., 460*l.*; 3, 5, and 7, Marlow-rd., f., r. 55*l.* 18s., 510*l.*; 36, 38, and 40, Marlow-rd., f., r. 66*l.* 6s., 600*l.*; 14, Digby-rd., f. beer-house, r. 32*l.*, 380*l.* By *J. Revell:* 74, 76, and 78, Dunlace-rd., and 116, Blurton-rd., Clapton, u.t. 82 yrs., g.r. 20*l.*, 900*l.* By *Newbon & Harding:* 30 to 52, Dorset-st., Islington, u.t. 30 yrs., g.r. 66*l.*, r. 337*l.*, 1,280*l.*; 154, Cloudesley-rd., u.t. 11 yrs., g.r. 4*l.* 4s., r. 55*l.* 18s., 130*l.*; i.g.r. of 129*l.*, u.t. 33 yrs., g.r. 24*l.*, Essex-rd., 1,300; 38, Mildmay-pk., Stoke Newington, u.t. 61 yrs., g.r. 3*l.*, 580*l.*

NOVEMBER 21.—By *Field & Sons:* 85 and 87, Spa-rd., and 1 to 16, Guildford pl., Bermondsey, u.t. 72 yrs., g.r. 23*l.* 15s., 1,210*l.*; i.g.r. of 50*l.*, u.t. 24 yrs., g.r. 20*l.* p.a., 400*l.*; 95, Rouel-rd., u.t. 44 yrs., g.r. 30*l.*, r. 125*l.*, 1,300*l.*; 111, Bushey Hill-rd., Camberwell, f., 400*l.*—By *Driver & Perfect:* 47 to 51 odd, Sunnyside-rd., Hornsey-rise, u.t. 76 yrs., g.r. 36*l.*, 1,410*l.*

[*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	15	0	7	5	0
Teak, E.I. ....load	10	0	0	13	0	0
Sequoia, U.S. ....foot cube	0	2	3	0	3	0
Ash, Canada ....load	2	10	0	4	5	0
Birch ,, ...	2	5	0	4	5	0
Elm ,, ...	3	10	0	4	15	0
Fir, Dantsic, &c.	2	0	0	3	15	0
Oak ,, ...	2	10	0	4	10	0
Canada	4	17	6	6	10	0
Pine, Canada red	2	10	0	3	10	0
,, yellow	2	0	0	5	10	0
Lath, Dantsic ....fathom	5	0	0	6	0	0
St. Petersburg	5	0	0	7	0	0
Deals, Finland, 2nd & 1st. std. 100	7	10	0	10	0	0
,, ,, 4th and 3rd	7	0	0	7	5	0
Riga	6	0	0	8	0	0
St. Petersburg, 1st yellow	9	10	0	14	10	0
,, 2nd ,, ...	7	10	0	9	0	0
,, white	7	0	0	10	0	0
Swedish	7	0	0	15	10	0
White Sea	8	0	0	17	0	0
Canada, Pine, 1st	13	0	0	24	0	0
,, ,, 2nd	9	0	0	16	0	0
,, ,, 3rd, &c.	7	0	0	10	0	0
,, Spruce, 1st	8	10	0	10	10	0
,, ,, 3rd and 2nd ..	6	10	0	8	0	0
New Brunswick, &c.	5	10	0	7	10	0
Battens, all kinds	4	10	0	15	10	0
Flooring Boards, sq., 1 in., prepared, First	0	10	0	0	14	0
Second	0	8	0	0	10	6
Other qualities	0	5	6	0	7	9
Cedar, Cuba ....foot	0	0	4	0	0	5
Honduras, &c.	0	0	3½	0	0	4½
Mahogany, Cuba	0	0	4½	0	0	6½
St. Domingo, cargo average ..	0	0	4½	0	0	6½
Mexican ,, ...	0	0	4½	0	0	5½
Tobasco ,, ...	0	0	5½	0	0	6½
Honduras ,, ...	0	0	5½	0	0	6½
Box, Turkey ....ton	4	0	0	13	0	0
Rose, Rio	12	0	0	19	0	0
Bahia	10	0	0	18	0	0
Satin, St. Domingo ....foot	0	0	9	0	1	3
Porto Rico	0	0	10	0	1	6
Walnut, Italian	0	0	4	0	0	7
METALS.						
IRON—Bar, Welsh, in London tn	6	10	0	6	17	6
,, ,, at works in Wales	6	0	0	6	10	0
,, ,, Staffordshire, in London..	7	0	0	8	0	0
COPPER—British, cake and ingot	61	0	0	62	0	0
Best selected	62	10	0	63	10	0
Sheets, strong	69	0	0	0	0	0
Chili, bars	56	10	0	0	0	0
YELLOW METAL ....lb.	0	0	6½	0	0	6½
LEAD—Pig, Spanish ....ton	13	7	6	13	10	0
English, com. brands	13	10	0	13	15	0
Sheet, English, 3 lbs. per square foot and upwards....	16	0	0	0	0	0
Pipe	16	10	0	0	0	0
ZINC—English sheet ....ton	29	0	0	29	10	0
TIN—Straits	91	10	0	0	0	0
Australian	92	10	0	0	0	0
English Ingots	0	0	0	0	0	0
OILS.						
Linseed ....ton	21	15	0	22	2	6
Cocoanut, Cochin	33	10	0	34	0	0
,, Ceylon	32	0	0	0	0	0
Palm, Lagos	27	0	0	0	0	0

OILS (*continued*).	£.	s.	d.	£.	s.	d.
Rapeseed, English pale	28	5	0	0	0	0
,, brown	26	15	0	0	0	0
Cottonseed, refined	19	0	0	0	0	0
Tallow and Oleine	21	0	0	40	0	0
Lubricating, U.S.	5	0	0	6	0	0
,, refined	7	10	0	12	0	0
TAR—Stockholm ....barrel	1	0	0	1	1	0
Archangel	0	14	0	0	0	0

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

BARKING.—For building Board Schools for 1,409 children, tar paving, &c., in Gascoigne-road, for the Barking School Board. Mr. C. J. Dawson, architect, East-street, Barking:—

Clarke & Bracey	£13,331	E. Lawrence & Son	£12,457
Staines & Son	13,296	Hobbs & Co.	12,440
Reed, Blight, & Co.	13,124	Ward, Clarke, & Co.	12,289
W. Wells	13,075	W. Gregar	12,237
Lansdowne & Co.	12,947	W. Watson	11,910
R. Nightingale	12,745	F. J. Coxhead, Leyton	
J. Morter	12,690	stone*	11,874

* Accepted subject to approval of the Education Department.

BARKING.—For erecting four cottages and shop premises, Ripple-road, Barking, for Mr. Henry Ubell. Mr. C. J. Dawson, architect:—

G. Rist	£800 0 0	D. Argent	£657 0 0
Edwards & Co.	725 0 0	J. Smith	648 10 0
J. Cornell	670 0 0	F. Jansom, Hackney*	635 0 0

* Accepted.

BARKING.—For tar-paving play-ground and for constructing roads and sewers, for the Barking School Board:—

Wm. Wells	£873 0 0	Hobbs & Co.	£668 0 0
F. J. Coxhead	827 0 0	R. Nightingale	643 0 0
Clarke & Bracey	789 0 0	Hobman & Co.	594 0 0
Staines & Son	759 0 0	W. H. Benstead & Son, Maidstone*	563 0 0
J. Morter	746 0 0	Bell & Co.	499 11 8
Lawrence & Son	738 0 0	Reed, Blight, & Co.	497 0 0
Wm. Gregar	726 0 0		
Ward, Clarke, & Co.	678 0 0		

Constructing Roads and Sewers.

Geo. Bell	£397 0 0	David Argent, Barking*	£361 10 0
John Smith	391 2 3		

* Accepted subject to approval of the Education Department.

BIRMINGHAM.—For the extension of premises Old-square and Minories, Birmingham, for Mr. C. J. Newbury. Mr. Arthur Harrison, architect:—

J. Barnsley & Sons	£498	S. Taylor*	£435
S. Surman & Sons	479		

* Accepted.

CHEAM (Surrey).—For alterations and decorative repairs at Caddington C-art, Cheam, Surrey, for the Rev. E. W. Northey. Mr. Thomas Hipwell, architect and surveyor, St. John's-grove, Croydon:—

M. Taylor, Croydon (accepted)	£496 0 0

[No Competition.]

CHUDLEIGH (Devon).—For alteration to National schools. Mr. J. Watson, architect, Torquay:—

		Time.
W. A. Goss	£380 0	14 weeks
R. Collins	308 0	11 weeks
W. Shapley	299 0	—
L. Beame	265 15	—
F. W. Vanstone	248 0	2 months
Rabbich & Brown	248 0	20 days
E. P. Bovey	225 0	12 weeks
R. Yeo, Torquay (accepted)	200 0	6 weeks

CROYDON.—For alterations and additions to warehouse, Aberdeen-road, Croydon, for Mr. A. C. Ebbutt. Mr. F. West, architect, Coombe-road, Croydon:—

Bullock	£967	Page	£807
Marriage	913	M. Taylor, Croydon*	807

* Accepted.

CO. WICKLOW (Ireland).—For the erection of a villa residence at Greystones, co. Wicklow, for Mr. Arthur W. W. Baker, M.D. Mr. W. Kaye Parry, M.A., architect, Dublin:—

R. F. Udwill	£2,050	Thos. Hall & Son	£1,853
Thos. Wardrop & Sons	1,625	Hudman & Co.	1,500
Henry Pemberton	1,389	John Good	1,375

DUBLIN.—For the construction of a complete system of drainage and outfall-sewer for the Catholic Deaf and Dumb Institution, Cabra, near Dublin. Mr. W. Kaye Parry, M.A., Civil Engineer, Dublin:—

	Drainage of Institution.	*Outfall-sewer.*
Maguire & Son	£1,699 17 0	£596 5 0
Daniel P. Curtis	1,515 10 0	497 10 0
Wm. Baird	1,500 0 0	498 10 0
T. W. Little, Kingstown	1,064 16 5	495 3 1
A. Hammond & Co., Dublin*	820 0 0	499 0 0
Daniel Sexton, King-town Co. Dublin	—	480 0 0

* Accepted.

EALING.—For the making up, &c., of Endsleigh-road, Felix-road, West, Comsaught-road, Bayham-road, &c., for the Ealing Local Board. Mr. Charles Jones, C.E., Engineer to the Board, Public Buildings, Ealing, W. Quantities by Mr. Charles Jones, C.E.:—

Nowell & Robson	£1,286 18 10	Constable & Co.	£992 19 1
G. Belt	989 4 6	T. H. Adamson & Son	877 18 0
W. Bath	893 11 4	J. Bell, Chiswick*	844 4 10

* Accepted. [Surveyor's estimate, £980. 17s. 3d.]

EDMONTON.—For rebuilding two cottages and repairing nursery grounds:—

Catling	£321 10	Watson	£300 0
Barnett	305 0	Lockyer, Balls Pond*	295 10

* Accepted.

HASTINGS.—For rebuilding "The Halton Tavern," Old London-road, Hastings, for Messrs Ballard & Co. Mr. Arthur Wells, F.R.I.B.A., architect, Hastings:—

C. & E. Harman (accepted)	£1,139 0 0

HASTINGS.—For putting in new shop front, &c., at 69, George-street, Hastings, for Mr. J. J. Butler. Mr. Arthur Wells, architect, Hastings:—

C. & E. Harman	£215 0 0	H. Chapman	£175 0 0
G. Vigor	179 0 0	Taylor Bros., Hastings*	155 0 0

*Accepted.

For Ironwork: Shaw & Co., London £73 0 0

HEREFORD.—For the erection of a small villa residence, Hereford. Mr. W. W. Robinson, architect, 10, King-street, Hereford:—

G. Williams, Hereford	£397 0 0

HETTON-LE-HOLE.—For laying pipe sewers with manholes, &c., at Barnes-street, for the Houghton-le-Spring Union Rural Sanitary Authority. Mr. D. Balfour, M.Inst.C.E., Engineer, Houghton-le-Spring:—

Thomas Dixon	£163	R. Hudson, jun., Sunderland (accepted)	£147

LITTLEBURN (near Newcastle-on-Tyne).—For building an infant school at Littleburn, near Newcastle-on-Tyne:—

J. Dixon Cow, Sunnyside, Towlaw (stone building)	£490

LONDON.—For alterations at No. 3, The Exchange, Balham, for Mr. T. H. Hovenden, senior. Messrs. Hovenden & Berridge, architects:—

T. Potterton, Balham (accepted)	£428 0 0

[No competition.]

LONDON.—For the erection of a new police-station, Marylebone-lane, for the Receiver for the Metropolitan Police District. Mr. John Butler, F.R.I.B.A., architect. Quantities by Mr. W. H. Thurgood:—

		Credit.
Patman & Fotheringham	£7,770	£90
Grover & Son	7,560	100
J. & J. Greenwood	7,587	116
Hart Bros.	7,577	126
Garlick & Horton	7,560	100
J. T. Chappell	7,530	90
C. Aswell	7,397	133
Scrivener & Co.	7,299	60
Higgs & Hill	7,298	35
Lathey Bros.	7,290	100
Smith & Son	7,283	90
B. E. Nightingale	7,187	100
Perry & Co.	6,983	15

LONDON.—For completing for occupation eighteen dwelling-houses in Glengall-road and Charteris-road, Kilburn, for the Mutual Land and Investment Association, Limited. Mr. Thomas Spink, surveyor, 26, Charing-cross, S.W.:—

S. Beale	£2,740	J. T. Chapman	£2,175
Geo. W. Cossons	2,180	Eady (accepted)	1,858

LUDLOW.—For the erection of drapery premises, Ludlow. Mr. W. W. Robinson, architect, 10, King-street, Hereford:—

B. Weale, Ludlow	£1,675 0 0

MILTON.—For staircases and alterations at Union-house, for the Guardians. Mr. C. W. Bevis, architect, King's-road, Southsea:—

W. Ward	£790 0 0	H. Clark & Sons	£648 0 0
D. W. Lewis	784 0 0	W. Learmonth & Sons	645 5 0
H. F. Boulton	730 5 0	H. & E. Sprigings	614 0 0
T. W. Quick	720 0 0	T. P. Hall*	610 0 0
H. Jones	650 0 0	* Accepted.	

PONTRILAS (Herefordshire).—For new hall at Pontrilas, Herefordshire, for Mr. E. Scudamore Lucas. Mr. C. H. Godsell, architect, Palace-chambers, King-street, Hereford:—

Lewis & Co.	£350	R. Taylor	£300
R. Andrews & Son	325	W. Virgo	297

RYECROFT (near Newcastle-under-Lyme).—For the extension of schools at Ryecroft, near Newcastle-under-Lyme, for the School Board. Messrs. Chapman & Snape, architects, Newcastle-under-Lyme:—

G. Bloor	£728 10	The Rose Vale Brick and Tile Company	£702 10
S. Wilton, jun.	723	T. Maddock, Newcastle*	693 0
Bradbury Bros.	721 12	* Accepted.	

ST. LEONARD'S-ON-SEA.—For shop front and other finishings at Nos. 29, 30, and 32, Western-road, St. Leonard's, for Mrs. G. J. Mills. Mr. Arthur Wells, architect, Hastings:—

H. E. Cruttenden	£427 0 0	Eldridge & Cruttenden	£394 5 1
C. & E. Harman	427 0 0	J. Lester	391 10 0
T. Salter	415 0 0	Taylor Bros., Hastings*	371 10 0
G. Vigor	406 0 0	*Accepted.	

SLEAFORD.—For the erection of engine-sheds and smithy at Sleaford, for Messrs. F. & W. Ward & Co. Mr. J. R. Benstead, architect, Sleaford:—

Hockley & Son	£998 0 0	Walmer & Feneley	£985 0 0
Woolston	700 0 0	Watson	640 0 0
Wadsley & Son	700 0 0	Greenfield, Boston*	630 10 0
Banks & Peak	687 0 0	* Accepted.	

SWANSEA.—For laying cast-iron socket-pipes (2,170 yards), together with connexion of sluice-valves, hydrants, &c., for the Swansea Rural Sanitary Authority. Mr. J. Thomas, Surveyor, 32, Fisher-street, Swansea. Quantities by Mr. J. Thomas:—

Charles Hanney	£312	Jenkins Brothers	£216
Frank Thomas	260	M. P. Griffiths	187

SWINDON.—For the erection and completion of Westcott School, Swindon. Mr. B. Binyon, architect, Prince's-street-chambers, Ipswich:—

Claridge & Bloxham	£6,397 0 0	J. Williams	£5,587 17 0
Grimwood & Sons	5,998 0 0	W. Jones	5,460 0 0
W. Scannell	5,879 0 0	T. Barrett	5,453 0 0
J. H. Collinson	5,850 0 0	H. Llewelling	5,422 0 0
H. J. Kite	5,796 0 0	W. Chambers	5,410 16 4
Reed, Blight, & Co.	5,783 0 0	A. Coe, Ipswich*	4,979 0 0
W. J. Hobbs	5,713 0 0	F. Stevens	4,907 0 0
W. Gibson	5,630 0 0	C. Crowe	3,964 0 0
G. Wiltshire	5,600 0 0	* Accepted conditionally.	

WESTON-SUPER-MARE.—For additions to "Priory Restaurant," Weston-super-Mare. Messrs. Price & Wooler, architects, Waterloo-street, Weston-super-Mare:—

Geo. Steere	£573 10	John Vowles	£442 0
C. Addicott	565 0	John Palmer	420 0
Theo. Palmer	479 0	H. A. Forse, Bristol*	420 0
T. Allen	475 0	* Accepted.	

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